Lent this Book to Dr. Jowry who
abt. 4 years after rett'd it no with a Letter
Dated 10 Oct. 1748 — with two other Books
many loose papers & herstain still two
large pasteboard Sheets roll'd, shewing of
his sche[illegible] The wicked borrows & pays not
again. an Argo

M 85
. Bd 77
IV, 33.
Burton.



Pythagoras his Monad and Triad

or

Plato's universall Soul in motion

or

His Harmonicall Problem

uniting

The same and th'other Together

or his blending

an Ens and a non Entity in Unity

with each other

as

Hitherto accounted desperate's

by all mankind

~~to a certain kind of space if to be measured~~
mathmatic Geometrie in a majestick mean with
awfull slow paced steps may walk surely on the Earth
and perform the office of a sacred Dictator as
supervisor or guide towards truth

Whilst Arithmetick to mortalls (when
alone) as it were a hasty Dream of Certainty (for
it never doubts) a nimble Messenger a swift
Carrier full of variations in Celerity, ever
seeking for truth: Unlest Geometrie as her
supervisor dictates to her how to set out right
at first, otherwise she oft mistakes the road
riding post out of the way. Yet long has the
world been Dreaming and fondly sacrificing
to her as if she were the Goddess Althea her
=self Nor are they yet awake but must dream
on untill they find (this their Idoll)
a meet handmaid to her all powerfull Mistress
Geometry; then like an able, faithful, nimble
Servant, they may court her without being
deceived and she will readily entertain them
with sincerity

Motion with time and Space are Phantasmes as one entire action of Body, its two Attendants time and Space are accidents attending motion

I should think they ought to be analogous to each other in mensuration for motion or the Sun the first Mover whilst its dividing space into equal parts the duration of which I call Time for neither space nor time are in themselves any thing but a meer vague meer accidents to motion and Body attending each in different ways for such a part of Space attends Body just as to circumscribe it round if I may so say and the duration of motion whilst a Body moves may be called time

whilst asleep never doubting untill one wakes & find ourselves deceived

never doubt the truth pres uming much on its own certitude swiftness and various easy ways in alacrity pursuing on rashly to find out truth too often Dreams owne error to excessive lengths

The Goddess of
Altho a or Truth

this taken from one of a small black covered Book

vi pa. 5th on the other side the same with alterations and additions

(!) (x) As to motion time and space if to be equally made

(Methinks) Geometry moves on the Earth most likely to perform the Office of a mediator guide or sacred Dictator, as supervisor to lead the way to truth with solid search and slow paced steps over the Earth

in measuration of universal space

broad wise firm and sure to Demonstration

But Truth method when alone to me seems as a hasty dream of Certainty (for like that) it never doubts the truth presumes much on its certainty in swift hops and various ways in celerity pursuing on without doubt to find the way to truth which it often mis-doth for if Geometry as ~~it~~ her supervisor, dictates not how to her how to set out right at first she too often mistakes the road riding post haste out of the way or at best hits it ~~for~~ short

(e)

Yet long has the world been dreaming and still fondly doating and sacrificing to ~~that~~ which as if she was the Goddess Allissa herself

may willingly & humbly to take Geometriall pas port & of it as a servitor subject to her

Knowledge is like waters, some waters descend from the Heavens, some spring from the Earth so the primary partition of this science of my Liniall Universe is to be derived from its

× as a certain Determined limited length in line
the forms of motion or body through a plain medium duely
plied are the Objects for perspective ×

1. ~~Spherical or Circular~~
2. ~~Conical or Triangular~~
3. ~~Cubical or Square like~~

Ψ visl curved and strait lines or conjunctly must make
up a third the first is unite the second termed Duality
by Plato and the last as unitor and these three
have different kinds of Position viz: the Perpen
dicular is the Oblique & in the Horizontale
& the Oblique compounded of both is Mediator
between the two extreams to unite them together
in harmony

♀ for light darts upon the Eye sometimes
with a direct beam; sometimes with an
oblique always Intersecting the medium

* or (the other extream) matter as passive fitt for the masculine
spirit or form of motion viz: a Circle to generate on *

& Spherical, perpendicular, and Oblique or conical
as before. The first hath its radius from its center to every
point through out its periphery ever equal the second hath its
Obliquity divided equally by an in double ratio by a strait
line from the Eye proportionally placed to the medium
and these three Principles when reduced into their lowest
Denomination is viz: a Circle 2dly a limited strait line
as the side of the square included in the above said Circle

and thirdly a media
line from between the
side of the included
square and the dia:
meter of the Circum
scribing Circle &

its fountains which proceeds from a two fold informa-
tion i: d: from the heavenly Circulations of its
Orbs and from the Diurnall rotation of the
Imaginary axis of this Globe we tread on, which
is a straite line ~~and~~ by our Idea thereof bodies
2 Bodies whose surfaces, or planes are the Objects of Perspective lines
are of three sorts & A sphe sphere & a cone, a
cube, the figures formes of which are on a Circle 2
an Equilateral triangle, 3 a Square, and the
form of these are in the lowest Degree lines of
two sorts, curved & strait; and the two last have
three kinds the perpendicular, the Obligue, the
Horizontall;

Wherefore the science of Perspective is of
three sorts, as a triple beam of things: the circular
motions of the heavenly orbs the first doctream.
2 the Intermediate position of the air transparent,
as a diaphanous Medium & the heavy Earth representing
by its axis first, as the second of space, the other
doctream *: Thus the objects of perspective lines
of Bodies are of three sorts; a spherical line
right or obligue, conicall lines equally obligue,
Cubical lines equally perpendicular, the formes of
which are in their primitive Geometrical Esprece
of lines simply such as, a Circle, an Equilateral
Triangle

one line major
one line ~~medi~~ median
one line minor

Infinite
mediate
terminate

to bring them into an harmonious problem for Demonstration's sake, are not like several lines that meet in one point as is too often taught but rather

Triangle; a square; which reduced to their most simple forms are, 1 one single Infinite curved line as major 2 simply equal strait lines oblique, in form a triangle 3 simply equal strait perpendicular lines, in form a square

and because the partitions or modifications or placing of these lines by position are not like overall lines that meet in one Angle but rather like branches of trees that meet in one stem which stem for some dimension and space is in his and continued before it break and part into arms and boughs; therefore the nature of the subject requires, before we pursue the parts of the former distribution to erect and constitute An Universall Science or position or scheme which may be the mother of the rest, and that in the progress of this science of perspective a portion, as it were, of the comon highway may be kept, before we come where the ways part and divide themselves This science we stile primitive scheme of perspective or the science of lines compounded of Divine and Humane forms blended by an infinite working mode of progressive series in motion

Arist: de
cubi:

which we will term the form or sample of continued or
Infinite motion as major

which we will term the mean or medietor partaking or
compounded of both forms

Quod conservativum est formæ majoris, id activitate potentius, is a ground in naturall Philosophy: for it makes for the conservation of the fabrick of the universe; that the chain and contexture of nature, be not cut asunder or broken; and that there be not a vacuum, as they call it or Empty Discontinuity in the world, and that heavy Bodies should be congregate and assembled to the massy pile of the Earth makes for the Conservation of the bigger of grosse and compacted natures; Wherefore the first and universall motion commands and subdues, the latter and more particular

of the { Infinite / Indefinite / finite } line { circle or Curve / Obliqued / base } or strait line

Motion in a Circle which hath no beginning consequently no ending which we will term infinite motion

Motion appearing in a obliqued line Diurnally in the same and gradual obliquity, (from the perpendicular) going forwards & backwards to keep a continuall proportionall pace as a mean between the infinite and the finite as their Limitor

△ the only exact Idea or determined form we have of the limited field of space in rest which we will term the mirror

the 3 Bodies are { Sphere, Cone, Cube } { their powers are } { major, mean, minor } { their forms are in } { Perifery of a circle, the side of a Triangle, its Root or side of the included Square }

mirror { spirit, mind, Body } { or } { motion, time, Rest } { or } { Life, Duration, Death } { their Operations are } { Unity, Triplicity, Duality } { a Circle, a Triangle, a Square } △

mind { motion, time, Rest } { Life, Duration, Death } { generation, Duration, Corporation } { Lesser, mean, Superior }
form
matter

Suppose the Sun in the Oblique circle of the Ecliptick to be the mover and to have moved from Aries to the tropick of Cancer and the Spectators Eye on the Earth the Suns place in the Heavens

as the word Berengo calls it

Motion finite or Motion of Rest is supposed
on the finite strait line as axis of the Earth's
rotation, and imaginary length without breadth
the only determined form to have of the measure
or field of space in the determined strait line of
(the worlds supposed axis) Rest which to keep
him with circular or infinite motion must
be going forward and backward alternately
thereon

The first is the Efficient cause } { Major }
The second the formall cause } as { Mean } as
the third the finall cause } { Minor }

Mind } i.e. { motion or the mover — } is the { motion
form } { time meter or mixer — } { duration
matter } { Rest or of its self the unmoved } { cessation

is the { life } { generating
being } { duration
death } { perishing }

☉ Suppose the Sun to be in the obliqne Circle of the
Ecliptic to be the mover and to have moved from
Aries one degree forward, and an Eye on the
Equatoriall point on the Earth stated; that one
Degree

Heavens shall not declare its true distance from
the Equator to the Eye stated for the appearance
will seem much less distant in an unknown
space to the beholder on the Earth for the casting
and westing is not to be accounted justly for by any
yet known law either by Geometry or Numbers
sailing for some time in one and the same latitude
unless you first know the true proportionall distance or

absolute rest is only in the axis a meer imaginary
strait line of determined length without Breadth
and motion for a circle including space but —
undetermined

Degree will not appear to be a Degree but an un=
known bigg or space to the Eye that beholds it from the
Earth not to be accounted justly for by any yet
known Law either in Geometry or numbers —
Therefore the Easting and Westing of a ships way
is not to be accounted for from the same —
latitude in many Days sailing thereon
Unless you first know the true proportio=
=nall distance from the Center
of the Earth to the Ecliptick exactly in
Conformity proportion all to the Diameter
of the Earth viz the Earth as aforesaid
& the Circumference of the Ecliptick Circle
must be first known so as to be perfectly propor
=tionally more or all agons to the Circle of
the Earth be it of what dimensions you
please to assume

And the sun moving in the Ecliptick and
the Earth of rest on its stationary axis here
are two contradistinguished streams to be
harmoniously blended together viz motion
and rest. Rest is only in the axis which is
only an Imaginary space in length a strait
line

nnd determind either in its beginning or ending for what hath no beginning hath no ending and since hitherto Ptolomy or

so likewise do they say the side of the square is to its Diagonal incomensurable therefore call'd asurd so as that no common measure or number can be given which shall devide the one and the other without a remainder if so how do they or can they demonstrate any certitude by the sums apparent distance from the Equator when he is come to the Tropick of Capricorn he having then — paped ~~one fourth~~ part on the Ecliptick circle or when he comes to the Equinoctial in September the Autumn quarter he — having paped half the circle of the Ecliptick which in a strait line through the center from one to the other being the diameter of the Ecliptick Circle it must consequently be the Diagonall of the Included square

~~for the entered overleaf~~

for motion continued hath a form allotted proper for it without beginning or ending but continuing viz: a Circle now its two stellative, space and Duration each should have its form that just proportion may be kept in harmony together but to find these forms number hath been hitherto insufficient

whose side let us suppose to be ninety I would fain know of these modern Sages what their trick the call calculation must make the ~~calculation~~ Diameter of the Ecliptick Circle to be just, without a remainder, but since they allow they cannot adde only here then consequently there is no knowledge to be depended on as ships Easting and Westing in sailing some leagues in the same latitude

by this [illegible] is —

since they dont agree [illegible] in a just determined measure of the mean distance from the Center of the Earth to the Sun but one [illegible] their own [illegible]

line, motion is in a Circle and hitherto all Philosophers have held that the Circle and the strait line are Heterogeniall or incommensurable to each other so is the side of the square to its Diagonall so how do they or can they demonstrate any certitude in their calculation of these unto distance from any Land, so consequently there is no knowledge to be depended on a ships Easting and Westing in the same Latitude by their Hypothesis

Besides there is no two of our Modern sages do agree together in a just determined measure of the suns distance from the Earth, Center neither can any one of them determine duely satisfactory to their own mind its true whole distance and yet they pretend to tell you a part which I must confess to me is absurd; for he that knows not the whole how can he tell a part since all the parts together make the whole: If he knows a part how can he be Ignorant of the whole since the whole is all the parts together; if this is not contradictio in terminis I know not what is

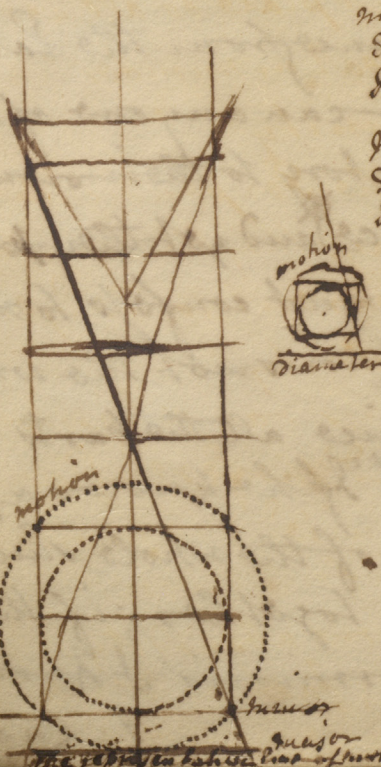
I know

I know but one way that this difficulty can be solved that is to find a problem to make motion time and space among themselves in Harmony adequately to agree and together the apparent form of motion which naturally appears unequal (as above) let a circle be the form of Celestial motion in itself ever equally divided as major, and let a certain length in a strait line proportional as a mean to terestial motion be also equally divided be the form of time and space and the axis of the Earth rotation be the form of space as minor. whose appearance is ever unequall being the form of nature as right line conceived to be Heterogenial to the Circle which is the form Celestial ever equal —

ee

motion = a Circle =
Time = } a strait line unequal in appearance heterogenial
Place = } but to adequate with a Circle each must be made equal and homogenial thereto

Motion = Major
Time = Mean — a strait line } both minors equal
Place = Minor a strait line }



let the form of the Heavens or motion be a sphere or a ⊙ that is Diameter is a strait line let the form of the Earth be a Cube or square included therein whose Diameter & whose side are strait lines then I say the square included in the Circle contains both major and minor the circle is the major and the side of the included square is minor but the Diagonal of the included □ is equal to the Circles Diameter tho' major — thus we have the major and minor given in strait lines now we want only a mean to be found in a strait which shall be equall to the Circle which is done thus

I know but one way that this difficulty can be solved that is to find a problem to make motion time, and place, among themselves, adequately to agree and blend together The form of motion (as above) is a circle the Priori ratiocam, the form of time is the minor bought to the form of space which is the Earths axis as rod

To view the utmost bounds of finite place inscribd by motion in unbounded space where motion time and place do all agree to take their different seat in number three yet altogether act in unity
The Curve th' obligue the Perpendicular by contr' distinguish'd ways they blended are and make the form apparent to the Eye as Image of undivided unity
amongst discordant things can so harmony
Their swift dovanish and there's flown
the curve and strait united are in one
and finite space with Infinite agree
forwards and backwards no absurdity
forward to life, perishing backward goes
so motion time and space alternate flows They

The two extreams being given under one Denomination or species as lines we must seek the third as mean through or on which truth may be declared to the beholders Eye. So this third must be reduced to its own proper length and station duely distant from the other two as contradistinguished forms as a just medium between the two extreams will be necessary first to lay down the true geometricall plan how or where each of the prior two forms (already given) are to be placed that we may know how to fix this third line sought in its right station or place that all 3 may cooperate harmonically together so as to be capable to discover the Offspring, Production, or effect, wherefore

N. B The Circle is termed by Plato the form the sample and Father, and the strait line Matter the Mother the Nurse and the seat and Receptacle of Generation; and that again that which is made up of both the offspring and the Production or effect as before this we will suppose will him to be the picture or form of an elipsis (which as the apparent form of a circle seen through the elevated Perpendicular Diaphanous plain or medium normally placed as ground plat to the medium this Elipsis we may will Plato name Orus as the image of the mental word. Plato in an other place names the first of the two opposite Principles the Same and the second Other and leaves a certain third nature in the midst between communicating with both principles

Zoroastres called the Beneficent active Power God and the other Daemon which he named Oromazes and the other Arimanius the first resembling light the other Darkness and Ignorance but Mithras was in the midst between their for which reason the Persians call Mithras the Mediator

Anaxagoras made but two, The Intelligence and the Intermixt and Aristotle called the first of these form and the latter Privation matter itself is Privation it often flies away and dispelves

* normanly is L from one normantled formed on the square

Thus forms and species generated are
making the Circle equal to the square
and numerists no longer need despair
to find a measure or a number fitt
for both Diagonall and side in itt
without remainder since comensurate
together are the Circle and the strait
by a Ray from or to an object seen
through a true medium sett just between
the curve of motion and the strait of rest
the strait no longer is antagonist
but yields in oblique lines unto the curve
both in equall simular steps do move
that's, intersect each other adequately
in motion, time, and space in unity
and thus all forms may generated be
for all the laws of motion ~~generated be~~ are but three
the Curve, the oblique, the perpendicular
and from these three they all compounded are
the Radius or any of these lines but known
the other two are found in proportion
Therefore howe'er ~~object~~ oblique object be
It's distance may be known proportionly
since motion time and place do all agree

wherefore

This taken out of a small Black covered book

29 Days the moons light wherein she performs her circuit
14 Days the moon is Decreasing from the full to the change
Apis is the Penumbra i: e: the space that a Body of light
is taken into the shadd part of Body as the Earth for the Sun
as Body hath a Diametrical Surface which shines on a
proportional surface of the Earth and where the two
extream rays of the suns Diameter terminate on the surface
of the Earth there the Penumbra begins and ends between
them both bounding the whole Penumbra called Apis
the moon is stiled Mother of the world

for Heaven and Earth, and Air and Sea, may seem to many independent Bodies; yet are they in reality but so many distinct parts of one Body: And the mutual regard of those to each are but the several prospects which one part wholly takes of it self

It must needs be so, because there is no other thing capable of being known by which carries such lively streaks, such express Image and Character, such clear convincing testimony of:

The {Formation / Creation} of the world

This is two fold therefore capable of a Double consideration: for the first and original Formation was the immediate work of Gods own Hand in the Creation of the world and all things in it; and this was supernaturall: the second is the work or oeconomicall order or Law how all species of the things therein should outwardly move among themselves so as to generate and multiply — according to the established Law God had given to all created Bodies, which Law we call nature

The Equilateral △

It is as it were the Mediator of the two different contradistinguished forms that Clue of Thread which leads the way how that two heterogeneall forms vizt the {Globe / Circle} and the {Cube — / Straitline} may be harmoniously blended together so as to generate all forms whatever a law to perfect Truth; or it is a Compounded form, between the Curve & straight that link of this Chain by which the Heavenly divine form of motion and Terrestrial or natural form of motion may {Blend / Hold} together through infinite series of Propagation

~~is beginning ending~~

Q Qw, Terrestial form of motion in line consisting of its Dualities multiple

infinitely Devisable &c after Dualities (i.e. beginning ending) &c

added & scratched out again

Matter antecedent to its form as a house must be framed & fitted up before we can suppose an Inhabitant in it and a shop made and furnished, before any trade can be exercised there.

The scheme of the first part

Three Considerations of Lines and the Condition in the motion of them as to the generation of universal forms —

1 Celestial, or divine, supernatural

1 Celestial form of motion in line consisting of its unity an uncompounded form and undivided whole in make, without beginning or ending therefore infinite, and ever the same as Plato calls it in his Timaeus —

2 Terrestial, mundane & natural

2 Terrestial form of motion in line consisting of Duality in difference infinitely divisable beginning and ending, as in celestial & distinguishing from the same therefore the Other as Plato

3 Intellectual, spirituale

compounded of the 1st & 2d

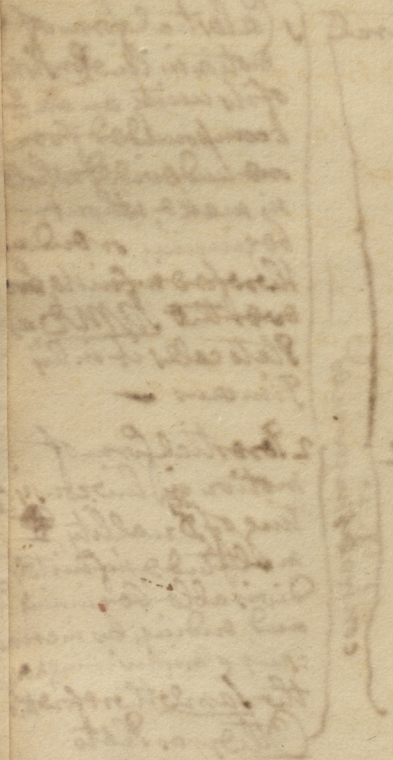
Intellectual form of motion in line consisting of the two former of a mean property — compounded between the same and the Other as a mean way and guide to eternal truth

A discription of their proper form in qualities under three Heads viz

1 Unity
2 Duality
3 Triadity

as a

Circle
square
Triangle



(31 The Circle is Homogoniall

The square is Hetrogoneal therevnto

The Triangle as a meane or Mediator betwixt the Homogoneal form & this Hetrogoneal form — wch the square of it is a direct path or Clue of this as guides to lead the mind safely through the labyrinth of universall truth, or to the same purpose that link of the Chain by which Spirituall and Intellectuall or Ideall and mentall things are tied together, unto the formall of substance of naturall Bodies or things conceptive to sense —

A Gradual diversity

The greatest degree of motion is infinite in line of extention but a Circle is the Greatest degree of motion

Therefore a Circle shall have the greatest degree of extention

Infinite motion may be in a strait line But a Circle is infinite motion

Therefore a Circle

q.e.d

the most continued motion shall be in the most infinite line

But the Circle is the most continued motion

Therefore a Circle is the most Infinite line q.e.d:

Suppose from the beginning of things two severall natures
or rather as extreams contrary to each other the one sensible —
notable subject to generation, corruption and change every way;
the other spiritual and Intelligible, and abideing always in the —
same state would be very strange to say that the spiritual —
nature admitteth of Division and that it hath diversity and —
difference in it and that the passible and corporeal nature is not
mixed in itself but divided into many parts Tho' Plato asserts
three five grounds and Principles of all viz Unity, Identity,
diversity, motion, and rest, as Immaterial principles admitted
tho' not exact, yet as perfect and agreable as could be drawn of
a correspondent Principle in the Corporeall mistery, partaking
as much as can be, of its power and virtue; for 'tis very plain that
the Cube is most proper and agreable to repose and rest like the
Earth, by reason of those plain surfaces of which it consists,
equal in length to the Earths Axis as the stated line of rest
which by motion approaching towards its Diagonal explains
diversity and as for the equilaterall Triangle or its princi-
:ple the Pyramid every body soon sees and acknowledges the nature
of its uniform and of its Sentibly composed of infinite degrees of Circle and
throughout Obliquity in it every way, infinite strait lines
and the nature of the Circle or its Principle the
Sphere we must allow it most capable to comprehend all
other figures or forms may seem most properly to be the
corporeal Image of Ens or being in the General indifferent
to this or that particular form or shape. And of the other
two which remains is motion operating or moving all things
even to its utmost extream which we call rest So that there
is in reality in nature no more than four Elements viz
the Sun which some may have called fire, air water and
Earth

Earth the first as primum Mobile moving in a perfect
Circle eternally the same which I am willing to believe Plato
called that Motion, or its form ~~2nd~~ or Entity, the second I
likewise suppose he meant by the Conick figure whose sides
make an Equilateralle Triangle which he calld Identity
and the 3d it is plain was meant by the Cube whose 12 sides
being equal the form of which is a square or a plain, and
included in a sphere or Circle and the Cone likewise included
in the same sphere with the Cube Thus we have produced
the 3 Principle first figures and their forms which are
the Sphere or Circle, the Cone or Triangle, the Cube or
Square their forms are as before a Circle an Equilate-
op) ral Triangle and a square These 3 Principle forms contained
and produced from a Circle as the Father being the Mascu-
line power of pure motion or action by its entire rotation
on its axis, which axis as a strait line being stated in its
seat of absolute rest where the moveing influence ceases
to act any farther this line we must acknowledge to be
the other ocean, the seat or field of determined space
called rest as the acquiescent mother of space to generate
on which the begetting power of motion dwideing into
{indefinite / indetermined} parts but always so as to be equal to its
own division whatsoever it assumes thus by these similar
parts analagously capable to be united in sacred matrimo-
ny together to generate all forms whatever altho' contra-
distinguish'd and Hetrogenial as hitherto ~~found~~ accounted
Yet Plato seems to own a third form, as Mediator to these
two extreams capable to unite these seemming opposites or
discords into perfect Harmony and this third form is the
Equilateralle

But having these three Principle forms given, yet it will require each should take up its own proper station of distance from each other as notes or strings in musick not only having their number but also their proportional distances from each other to compleat their concordancy Therefore

Since Motion time and space are equal necessarily; for motion giving the law, being quicker or slower produceth time in every period of its duration ergo according to its velocity equal ergo time is equal to motion, and again since motion giveth the law and taketh up such a space in such a time or period therefore consequently they all three are coequal therefore their due stations must first be stated to compleat their concordancy.

And since these three Principles are to be made equal tho' their naturall forms of lengths are different for the Diameter of the Circle is major necessarily by circumscribing the other two viz the Triangle as mean and the square as minor and the mean is to be the Mediator or visitor of these two contradistinguished (or as hitherto thought) heterogenious forms viz' the curve and strait 'twill be most rationale to divide the whole distance from the point of motion where it begins to the point of rest where it leaveth in the minor into three equall parts and that one of these parts be the measure of the mean line and since the Diameter of the grand Circle is the longest line contained in it let the major line be plaunted in it on which also inscribe the square with its circumscribing Circle and make a tangent line to the same Circle parallel to the side of the square and equal

equal to the major Circle's Diameter this Line will be the
comon field or space on which to adjust an analagous equality
between the Intellectual and the sensible property by the Appli-
-cation of the Medial or plaited between them

The Major includes the minor and consequently
the mean, then let the side of the included square as minor
being the upper base, and the Major the tangent line as
the subtense or lower base comon between all three as
containing them and divide this lower Base and on or
from the middle point raise a perpendicular & carry the
length of the mean line thrice upwards thereon and from
the highest point setting one point of the Compasses in the
middle point of the lower Base or subtence and strike a Circle
from the upper point including the Perpendicular which shall
be equal almost to the whole circular motion of the moveant Body
at which point draw a Tangent line parrallel to the lower Base
and set thereon a line equal in length to the mean line given
on each side the Perpendicular and circumscribe this said line
by an outer Circle and from each of the extreams of this upper
mean line carry cross the Perpendicular two lines to the
extreams of the lower mean line crossing the Perpendicular
in the middle point, and from that middle point downwards
set half the length of the minor Principle, as also the other
half upwards from this middle point Thus you will have
given an entire Plan of this my linial Universe capable
to generate all forms whatever

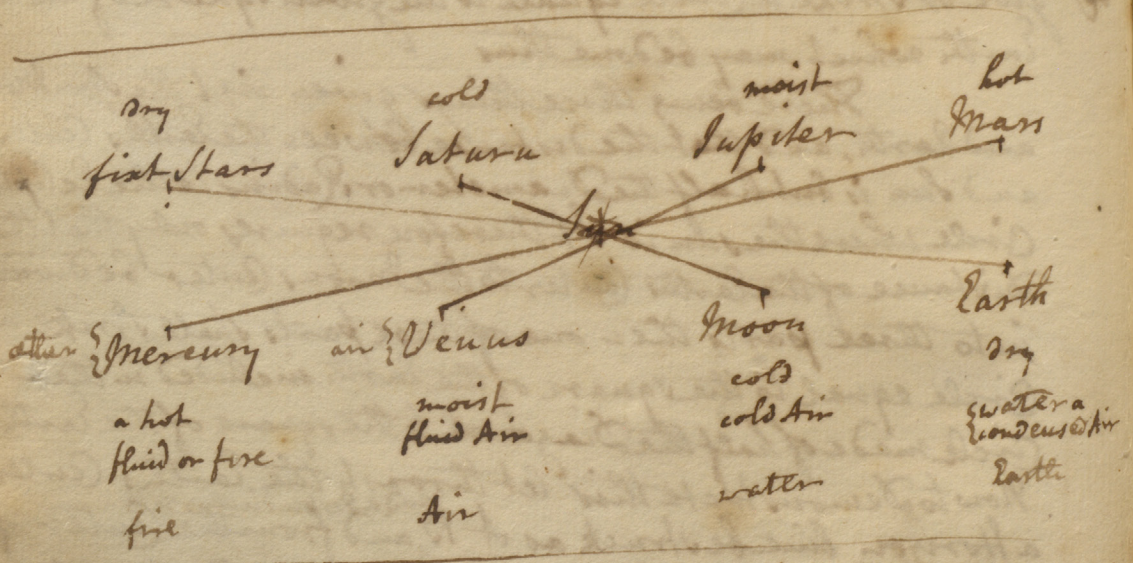
Let us call the Circle the Intellectual form, the strait line
the sensible form

(4) There is but one Efficient cause of all things an Omniscient Infinite good Eternall Being which we call God or some Osiris, Jupiter Oromazes &c This Infinite Power, is an Immaterial Being, un mixt, Simple Unity, pure Spirit: And as such his — Incomprehensible to human mind (which is a motion compounded between Soul and Body so Impressed on every sense by motion on matter or in other words an Act between Motion and rest; For in the Universe of nature there is but matter and motion which is the same thing as Rest by motion generates every Individual thing (I would not be misunderstood for I mean) that matter in itself un active, as in the lowest extream seat, which may be called the feminine field or place of y^t Rest and motion being the active power seated as the other Extream which may be call'd the masculine field, or plate or Sphere of action call'd Motion; These by the fiat of Almighty Love ordained by a constant Law as a mode of Infinite Action in the Agent to rouse up Sluggish matter, it self and all its parts, to attend and be found to follow the masculine Power This is apparent in the Sun For Jove planted the Dense matter vizt the Earth as the first extream and lowest in its stated place & then raised Sol in his higher Orb bid him goe therein round with such a velocity with out end untill he bid him cease then placed the moon or Diana in the midst between them both from whose Center the Compasses striking a Circle from the Sun will also intersect the Center of the Earth comanding both her and the Earth each in their Sphere to follow to their utmost and attend their leader analagously in each of their respective Orbs how ever distanced from him, according to his absolute rule laid down with in his Law which are Principally these

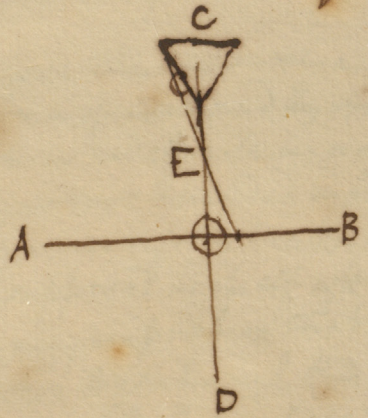
these That as Sol (or the Sun as Principle of Motion) rouls round his Orb of motion call'd the Ecliptick so let the Earth as seat of the minutest motion roul round her seat of rest which is purely its axis as diagonale to the square = to the reall horizon circumscribing the whole the form of the [Earth matter] represented by a Cube by the Ancients as the form seat of rest in the last degree of motion the form of which is a square as shall be explained presently. By this you see there are two proportions given viz a proportion of the Suns moving body viz in the Ecliptick and of the Earths Diagonal line which describes a circle of the Earths apparent Horizon or outmost bounds by the Peristery which half its Diagonal makes as radius thereto, and complicating the whole Diagonale by adding the other radius unto it now the Diagonale being the major line that can be drawn in a square and the side of the square is its real true measure equal with # # # all its sides and minor to the Diagonal this - neceparry to find a mean line between these two that shall give or strike a Circle equall to the given square of the - Earth which may be done thus

There being three things given viz the Sun Moon and Earth, and that the distance between the Earths Center and Sun is but half the Diameter or Radius to the Ecliptick Circle where the sun is It therefore requires only that the Distance of the Earths Center to the Moons Center be divided in to three parts then one of these parts shall strike a Circle equal to the square of the Earth included in the - Circle made of half the Diagonal to the square of the Earth.

Now to Demonstrate this let through the Earths Center a Horizon line be struck as A B and perpendicular to it and from the Center of the Earth at ⊙ with the other end of the Compass strike the Circle A C B D which suppose equal to the Aquinoctial or the


dry
first Stars
cold
Saturn
moist
Jupiter
hot
Mars
Sun
ether
Mercury
a hot
fluid or fire
fire
air
Venus
moist
fluid Air
Air
Moon
cold
cold Air
water
Earth
dry
water a
condens'd Air
Earth

of the Ecliptick then Dividing the radius of the Ecliptick Circle as ☉ C into 6 parts it consequently divides the space between the Earths Center and the moon at E into 3 parts one of which parts shall as radius strike a Circle equall to the square of the Earth included in the Bounding Circle of the Earths Horizon



in the limits of the { Sun } in the { upper Region } is { fixt stars, Saturn, Jupiter, Mars, Mercury, Venus, Moon, Earth }
{ Moon, Earth } { lower Region }

the Sun may be called the efficient natural cause of action by the Expantion of his Æther a real fluid : by through the Sphere of his own activity which may be called the field of motion as the first extreame

from the sun to Mercury is a hot subtle fluid called fore

from Mercury to Venus is a thin fluid called Æther

from Venus to the Moon is a thick fluid call Air

from the Moon to the Earth is the thickest fluid called water

The extreame of which begins Earth which may be called dry density as the last extreame of field of rest


C
B
A
D

(5) The universe is a Collection of Distinct Beings comprized within a Union or form of an Extended Heap called matter modified into an Indefinite number of different species or Bodies generated by motion from without given

Suppose the universe a Collection of Distinct Beings with motion infused and by order ranging matter into various forms indefinite in number weight and measure but the universe bounded in its own outward surface or extention by an uniform Make called a sphere and if matter therein is supposed in it self at rest as the patient only fit to receive any impression that the Influencing power as an Infinite wise Agent viz. God did ordain create or give by laws of motion by him established to some one or more Secondary or Substituted Agents rightly placed therein by his infinite wisdom & power to excite a meer Chaos an undigested heap of matter to be moved or generated into such various forms so beautiful its whole structure all its parts so harmoniously agreeing to compose one whole that not the least minutest part is Idle from the one extream that same * beginning of motion to the other extream ending or cessation of motion at the Imaginary line of rest viz. the Axeltree of the Earth if such established laws throughout the whole are fixed as sure they are

But if the Principle or premises from whence it results are or certainty known to be so, the conclusion may be taken as certain absolute truth: But otherwise the Truth obtained at the end of the Argument is but Hypothetical, or only this that such a thing is so if such others are so or so for an Intelligent Being such

as

in the is subject the following words
that are markt with a line under
neath were so markt in the original

as Man must have some Imediate Objects of his understanding or at least a capacity of having such amongst the various notions of the Heavenly Bodies as the Sun &c operating or influencing us and our Inferiour Orbe throughout even the senses as sight and touch &c convinceth every one that we have such Ideas or Objects that are Imediate and are adequately and truely known to the mind whose Ideas they are and those Ideas being Imediate nothing (by the term) can Intervene to encrease diminish, or any way alter them. and to say the mind does not know them truely implies a Contradiction: Because it is the same as to say, that they are misrepresented; that is, that there are intervening and misrepresenting Ideas.

And lastly there cannot be an Imediate Perception of that which is not; nor therefore of any Imediate object otherwise than as it is we many times indeed have wrong notions and misrepresentations of things: But then these things are not the Imediate Objects. They are things, which notified to us by help of Organs and Media, which may be vitiated, or perhaps are defective at best and Incapable of transmitting things as they are in themselves and therefore on occasion Imperfect and false Images. But then even in this case, those Images and Ideas that are Imediate to the percipient, are perceived as they are: and that is the very reason, why the Originals, which they should exhibit truely, but do not, are not perceived as they are. in short, I only say the mind must know its own Imediate Ideas.

The imediate Objects or Idea's may be as I said above misrepresented by false reasoning and Ignorance from many practices discourses, diagrams of Mankind which are often too justly taxed, yet I would have it minded that I do not say, men may not by virtue of their freedom ease

multitude

multitude of Affairs & break of their Inquiries prematurely; that they may not be misled by old Errors handed down to them by some dazling brightness of Authority carried violently down the stream with the general applause; that they may not be unprovided of a competent stock of praecognita and preparative knowledge; that among other things they may not be ignorant of the very nature of reasoning by lines to which Geometry gives Sines to problems perspective Diagrams Optiks perspective &c and make them just that they may not pretend abilities which they have not; that they may not patch and start up an Hypothesis instead of Demonstrations to solve or make out some spurious illegitimate Offspring of their own fond Illusions or at last that they may not cut the knott that could not untie: I say none of these things. The contrary I confess is manifest: and it is in opposition to those errors which appear in these cases under the name of reason and science that we are forced to add without Geometrical and Perspective Demonstration there can no Hypothesis make out the truth of our Ideas from object seen or salve the appearances of Objects moving through a fluid transparent Medium as Air where no tract or Periods can be traced or remain of the whole motion so as to be with time sedately examined reviewed corrected or amended without which no perfect Draught or Picture can be drawn without by the hand of a Painter unless he be well versed in Geometrie especially that limb of it perspective which always requires a Diaphanous medium or plane rightly stated such as glass or rather an Imaginary plane perpendicular to the Horizon to be placed between the Object and the Eye thro' which plane the rays of light in strait lines reflecting from every point of the Object passing to the Eye through the glass or medium will intersect the medium in

in such respective points as to represent the appearance of the form of the Body or Object seen or the form of the motion of the Object vanishing points of motion through a transparent fluid air can be truly and justly collected or congregated on the erected surface of the medium proper to the motion, line and place of distance, but this requires no little knowledge in Opticks which Painters pretend in general pretend to understand tho there is scarce a number of Geometricians that knows the temperamious periods (the Archanum) in lines of Perspective especially the analogie between the curve line and the strait for they all of them do averr that they be Heterogenial to each other and can never cooperate together this has been an error handed down for many ages even to the posterity of these times taking it for granted that the Ancients found the knot not to be untied therefore they have given it over and chose rather Monstrously to cut then take the pains to trace the maze in vain or seek how to untie it which they have done Monstrously and egregiously deforming the Beautiful symetrie of nature whose laws are just and few but capable to do all things whilst they where certainty is not to be had must substitute probability in the place of it that is it must be considered, which side of the Question is more probable

Probability, or that, which in this case may incline one to believe any proposition to be true rather than false, or any rather to be than not to be, or the contrary, will generally shew itself upon the application of these and such like rules. That may be reckoned probable, which, in the estimation of reason, appears to be more agreable to the constitution of nature No body can certainly tell the bigness of the Sun unless he first knew its distance from the Earth or either whether He be stationary in the Center of Gravity only revolving round his own axis, or the Earth stationary in the center rowling round her own in the Center of Gravity: yet any one would rather

think rather choose the latter as being more agreable to nature since all matter with in our reach especially of our senses we are convinced subtends according to its gravity towards the Center of the Earth and all Aetheriall things as they mount therefrom shood nay does (if our sens[es] mis guide us not) rise proportionall to their levity and who can suppose or Imagine an Opake dense Body which we know to be weighty as our earth is for noae so dull or stupid sure but knows that small little Particles of it forced up into the air returns again swiftly by its own gravity and that flame ascends Therefore why we should suppose the bright sun shood be the Body of greatest gravity rather than our Dull Earth is counter to all reason if governd by our strictest enquiry into appearances of sensible Objects and to goe beyond the ken of our senses is to run not against the laws of nature distort her form even to a monster under pretext by a superlative cleared inquisition beyond the reach of comon sense even lost in vain to former reason that they may bring nature to yield and comply to make out by a false light the truths of their superb Hypothesis Audacious like Alexander cut the knot by him not to be untied but the Imposter Mahomet in the shew more humble misplaceth not but yields to go to the Mountain which wood not come to him but these world makers draw nature not by the life as true similitudes but as the Painters do their Arakaterah mear Chymeras denieing our senses as our sight our touch &c be nay our reason to be our guides and goe counter and against all experience as far as we have power to reach to follow a Phantasm which being out of our reach we cannot examine to prove it fact but swallow the monstrous Improbability, and take it upon Copernicus his Hypothesis which he did not believe himself but only found that to such an one he could compose a Calculation which wood the nearest agree to make it out with less errors than the Ptolemaick Calculation could tho' the system distorted nature more and necessitated egregious errors to be subsequent to it having set out with his back upon truth the further he goes the more he recedes from it which many Ages will not be able to rectifie yet willing to have the

lawfull

lawrell from Ptolemy to wear it on his own brow he traced this path in learned Error & laboured in a wrong scent and the full cry following mis leads mankind so far till they have lost their prey and been hurried on headlong into utter Darkness, which if not already, soon will be felt. When Herodotus writes, that the Egyptian Preists reported the Sun had within the compass of 11340 years twice risen where it now setts and sett where it now rises what is fitt to be believed concerning the truth of this relation (as many others) is easily discernable by this rule. Herodotus, possibly delighting in Teratical stories, might tell what he never heard or the papage might be an Interpolation; or it may be altered in transcribing: or the Preists, who pretended much to a knowledge of great antequities, might out of meer vanity, to shew what children the Greekes were in respect of them, whence they thought to have not much science amongst them: or it might be got into their memoirs before their time, who related to Herodotus, and so pass upon posterity, as many other fictions and legends have done. These are such things, as are well known to have happened often. But that the Diurnal rotation of the Earth about her axis should be inverted, is a Phenomenon that has never been known to happen by any Body else, either before or since; that is favoured by no observation, and that cannot be without a great alteration in the Mundane System, or those laws which the motions of the Planets and our Earth are governed. That this account then may be false is very consistent with the uniform appearances of nature but that it should be true is very inconsistent + + +

to be so, it has by this acquired an established credit; the cause may be presumed to retain its former force, and the effect may be taken as probable, if in the Case before us there does not appear something particular, some reason for exception. When neither nature nor other Observations point out to us the probable conjectures to us we must be determined (if it be necessary for us to be determined at all) by the reports and sense of them, whom we apprehend, Judging with the best skill we have, to be most knowing and honest. Of all these rules the first is that which deserves the principle regard: the other two are of use, when nature so utterly excludes us from all her bosom that no opportunity is allowed of making a Judgement. Lastly when nature, the frequent repetition of the same event, and the opinion of the best Judges concurr to make any thing probable, it is so in the Highest Degree

Law 1

Matter or Body perseveres in the same state of rest as an inert power it is merely papive and in itself at rest and void of action unless forced out of that state by some outward Impressed violence i.e. all Bodies as matter naturally consist in rest as an unactive Being unless some externall cause put 'em in motion: And all Bodies put in motion will pursue that motion proportionate to the greater or leaper Impulse given and must goe on in a strait line till it gradually ceaseth in Rest: by the power of the Pulse given lessening as it approacheth its other extream i.e. rest to which it always sooner or later ends in.

Corollary 1

Hence it is evident that no Body put in motion will naturally and of its self move in a Curve line. All motion is naturally forward in the same strait line with the Direction and Quantum given of the moving force and how farr it shall proceed ere it ceaseth.

Corollary 2d

Hence there can be no perpetuall motion arising from one single Impulse for this motion must be propagated to continue longer or shorter proportional to the power of the Impulse given or if adopted so as to move forward in an Orbit that it may return upon the first mover yet in both cases it must continually decrease, and att last stop since proportional to the Impulse given the motion can no longer last but gradually inclines to rest according to the time given by the force of the Impulse either shorter or longer proportionally continuing

Corollary 3d

Corollary 3d

Hence the Great Body of the Sun does not naturally and of itself (tho' at first put in motion by the Great Creator of the Universe) move in its respective Orbit which is a Curved line returning into itself but is kept in by the vortex of a Medium of the same equal Density with its self equidistantly posited from the Center of the Earth for Otherwise if from a pulse given it would run out into a strait line proportionall to the Pulse given and so consequently the Suns motion in its Orbit doth absolutely depend upon Gravity & the Circular vortex of the Medium which is of equal Density with its self wherein it swims in aequilibrio but its real primative motion or first Impulse is the fiat of Infinite Power and it was good Ebb — there be Light and there was Light and it was good which governs this our Universe

Corollary 4th

Since then it is not Essentiall to matter to move or change its direction in itself from rest to motion or from strait to Circular motion it is evident that putting a Body into motion or persevering it therein (both) does absolutely depend upon Almighty God as its cause since no part of matter can move itself so the first Impulse and circular motion is derived and dependant on Infinite power

Corollary 5th

Hence motion and rest are not so much distinct properties i:e: Rest is the result (as the other extream) or lowest degree of motion given in any quantum however for motion includes space

To explain myself let us suppose a Body a Body as a sphere staled in place but revolving round its axis would it not

not include the major and minor degrees as to motion for would not the whole surface of its outward face contain infinite parallel (30 Circles from each side of its meridional radius as major towards each pole genteelly graduateing by infinite steps to motion of rest i.e: the supposed axis of this Sphere is the sum total of all the ~~Sphere~~ Centers of the Spheres parallell Circles in its axis as an Imaginary strait line, the seat of rest therefore with my Lord Verulam vi: I call this supposed line motion of rest, as the latter extreamy and appendix and not a different Quality, as a Being of itself, as Body, but a meer Phantasm as in the least degree belonging to ~~Mo~~tion, as Cessation in rest.

Corollary 6th

Hence we may conclude that matter or Body is an inert substance, void of action unless by some outward force impelled upon it and then it proceeds according to the direction of that outward power or force in only two different ways of direction from the Impellant power viz: in strait or Circular formes proportional to the impulse given

Corollary 7th.

Hence we may soon satisfie ourselves that every or any motion given to Body by Impulse must continue no longer than that the force of the Impulse be worn out since this evident to sense The more violent the Impulse given be made the farther the Body sent will go till it terminate in Cessation, as the end of Motion, and the velocity is increased by the quickness or smartness of the Impulse given proportionally, yet both Powers must goe naturally in strait lines for otherwise the Body moved as matter, must of its self change its direction continually could it move in a Circle or ~~Curve~~ line which is Impossible for matter to be as of itself since it is an Involuntary Substance uncapable of motion

Therefore

therefore can be only the place that matter or Body is circumscribed in as the field or Bed naturall of Space for the masculine power to act in, or I should say, for the supernaturall masculine active power or Spiritt to generate on

Corollary 8th

Hence 'tis rational to think and allow a supernatural masculine power as agent and a natural consequence as patient governed by this primitive force but what this force is tho' we perceive that such there is but Incomprehensible to human reason to comprehend its nature therefore we call it spirit but spirit is beyond human ken

Corollary 9th

Hence we must conclude that Being Spirit is a Being self existent all powerfull, infinite, universall

Chap 1st

Of the Physicall laws and the uniform apearances of nature

Nature and its laws lies in comon open to be veiwed examind or searched by every capacity according to the Power given The proud will not be baffled the well meaning man humbly searcheth the weak pin their faith on the positive Its Laws are the most simple and least compounded and the appearances are — likewise Simply and uniformly to be accounted for But great Capacities think to this vast machin of the universe (as the Production of Almighty God) there must be unaccountable Jupiter surprizing mysterious ~~surprising~~ reasonings found out either to make themselves adored by the thoughtless and credulous part of Mankind or to salve their own Hypothesis by cutting the Gordian knott they should untie thus they disguise their own Ignorance

2 For there is no such thing as a universal soul animating this vast system according to Plato nuleps ex the Suns Power given from above ex nor any substantiall forme according to Aristotle nuleps ex nor does the Sun ~~strongly~~ ex ~~the~~ centre to let the Earth & other ground it ex nor any centrifugal force thrown off by the tangent ex nor any centripetal force towards the Center nuleps they mean only gravitation of matter to its seat of rest and the penetrating or attractive force of the sun meanly placed betweeen the Planets as the chief mover or agent influencing this universe as instituted by the great Creator as his Vicegerent and primum mobile ~~as the~~ secoadary cause of motion

3 For natures laws is perfectly governed by Spirit i:e: Jove who by his Agent which is mould and motion with power He hath given to his Vicegerent Apollo as the Primum Mobile or the appar-
rent

=rent motion, to Mortal capacities governing Matter for matter
is but the field which motion plows up and lays its seed to generate
forms for in rest it self it is inactive but penetrated by motion
which matter in gloss etc. and according to motion
time and Space with its obliquity produceth accordingly

I am thinking to use the name of Jove or Jupiter —
instead of the Almighty Least I should Bring false fire into
the altar of the Lord in these my lines

(8) Law 1st

Matter or Body in its true place persevere ever in the same
state of rest or if misplaced of moving forward by gravitation
in a strait line to its stated point of rest unless forced out of the
state by some outward impress'd violence i:e: all Bodies will
naturally, and of themselves for ever continue in rest, unless
spirit i: e: motion by some externall cause put them to move
which of themselves as matter must ever be in rest: and
all Bodies put in motion will move forward in the same line
which the outward influencing power hath directed and
proportionall to the duration of that commanding outward
Power and whilst the same Energy drives them forward in
the same direction will continue so unless they are stopt by
some opposite force, or moved Out of their course by some
differently directed violence for in its self it ever tends to
rest.

Naturall Bodies consist of a Mass of matter, which by
its self can never alter its state, and if Bodies are once at
rest they must continue so, unless some new force put them
in motion, If in motion, the same Energy will continue them in
motion and drive them forward in the same direction proportionate
to the power of pulsation, or attraction given.

9 Dif circumscribing nothing
should not be put after (and Tria)

(9) Simple or Infinite motion i: e: Motion Including time and Space Uniformly (34

I comprehend it as one Intire action of Body and that its two Phantasms time and Space are meer accidents attending the moving Body; But Body takes up a certain place and is circumscribed by it wherever it goes as out of Imaginary Space but Space is a meer vague Phantasme also a supposed void circumscribing nothing and time is a Phantasme of Duration as place is a moving Phantasm in imaginary Space

A continued uniform motion shews its self one simple form by its Bodily rotation in a Circle, but the forms or Images of Phantasms viz Time and Space must be by some Criterion searched for tho' they are similar in form yet their property therein differ as much as (in time) a Present Now, to a future then

Hence we gather and necessary conclude that a Circle is the form of Included Space and the way of uniform revolving motion as place is the form of the Included, or circumscribed Body therefore a Circle is the form of a real something revolving in itself in unity bounded as one whole circumscribing place and not a vague or Phantasme circumscribing nothing or unbounded as contrary to a Circle which is meer unity

Hence we gather that Duality being contrary to unity unbounded and a Circle is bounded in unity revolving in itself a line call'd by Plato ever the same therefore a strait line, contrary to this Circular line must be a line unbounded not unity nor revolving in its self also call'd by Plato the other therefore a strait line unbounded un uniform as to motion therein, circumscribing nothing as not in unity with itself as in motion to revolve therein

but

but contrary to a Circle in all respects I think the strait line as it is not a real form including something as Body I can call it only the Phantasme of a form or the Phantasme Form of some as being only the contention of either length Breadth or Depth of Body or form in strait Direction

Thus having the Circle given for the real form of simple motion or Body for Celestial motion as unity so a strait line is given for terestial motion contrary to it as a Phantasm meer Duality and that time and space are only vagues or accidents to motion Yet as above since motion time and space must be by some Law or other measured so to Agree analagously together to account for their unity in action that a scheme may be laid down to demonstrate how the Celestial Law which is Circular and Terestial Law which is strait may be blended together in harmony that we may know how to adjust motion time and place so as to account for every or any place certain place in any Latitude gon to know what Easting or Westing has been made in sailing at any time Is necessary

This is a Copy from the same Sheet as pa: 1st backside

The way which directs vision as a guide to Truth
is due Observations of sight taking in one view the appea-
rance of Celestial and terestial motion in a complicated
form together made from the three Principles contradi-
tinguish'd Bodies from each other and their forms how they
tend which are no more in nature than three only as
directors viz the Sphere the Cone and Cube whose forms
are a Circle an Equilaterall Triangle and Square these
only give the initiation by blending their forms together
as a way to find out truth for it is atchieved neither
by knowledge in discerning these wholes compounded
in themselves but by a medium which is single and
simple and stronger to sence than all such complicated
knowledge, for this direct way of thought how first
gradually by geometrical means it may reduce these
three seeming discording principle forms into all one
species each in their lowest denomination according
to naturall motion of conception for this direct Geometry
endeavours tho slow yet sure as will be in our reach thus by
naturall means our souls are lead or raised securely
to fathomless heights depths of Truth diveing or mounting
into that Sea which otherwise can never be comprehended
or fathomed But strait lines or rays of sight is by only
humane or naturall direction to account for any motion
either supernatural or naturall and if the supernatu-
rall and naturall are to be blended together so as to
demonstrate to sense what form the appearance of these
two contradistinguish'd appearances beams shall make
when united by our visual rays then a strait line must
be the medium which is the radius or shortest ray included
in the midst of the whole Pencil of rays of one entire sight

the Eye as shortest and nearest the Object the rest of the rays are only
a distant one each side but what I here say must be read with (37)
a great deal of Judgment and precaution therefore it requires
a farther explanation

It is to be consider'd that Celestial Motion is represent-
:ted by ye form of a Circle as continued motion or Infinite
which the Sun moves in and Terestial motion represented
by a strait line as the Earth's Axis on Which it revolves
called by Ld Verulam Motion of rest i: e: motion in the
least Degree or finite where I suppose the Eye is posited
and this Axis hath a determined length att both ends
and if this line which is strait and finite can be any
way thought that it may be divided into equal parts so
as motion thereon may keep equal continued pace with
motion in a Circle which is without an end it necessa-
ry must be by the Eye moveing thereon forward and
backward att such and such periods as increasing
and perishing distances from its first starting

This is a Copy from the same
sheet as pa: the first backside

(11) Motion Duration or Time and matter produceth (so all things by the stated law setled between them from the first established between them by an Omniscient Omnipotent eternal Being.

The Epicurean Philosophers thaught matter and motion the only two Principles of all things and the modern Philosophers have mended the matter not much more for altho they allow a supream Being they corrupt his law given to the motion of this his universe by changing the former word gravity and putting in the room of it Centrifugall and Centripetall force i:e: the first by circular motion flung along the tangent of the Orbit the other towards the Center about which the Body moves and that these two Impulses the first being once Impressed does continually persevere and needs no more to be renewed, the second continually draws the Celestiall Body from its rectilinea Motion and forces it into a Curvilinear Orbit so that it must be repeated every minute of time

The first of these two Impulses being once Impressed he says (ie: Dr Cheyne in his Philosophical Principles of natural religion) does continually persevere and needs no more to be renewed how weak this allegation is will appear, if we consider that the Impulse of ones finger by giving a Ball, or a Pistoll by sending a Bullett forth, the Impulse of the first must be proportionall to the gentle push, which cannot go so farr, or so long as if the push in its Impulse were doubled for if it could than the velocity or force of the greater Impulse would be equal with the leper which is absurd or otherwise if the gentle push in a straitline

strait line the Ball will Infinitely move; and the greater Impulse move but Infinitely too than they both are of equal power which I must confess I can not understand

Altho' the Doctor cites Mr Newton and Doctor Gregory to avouch for him that 'tis necessary for the celestial Bodies to have two Impulses one along the tangent of the Orbit — another towards the Center about which the Body moves, the first being once Impressed, does continually persevere and needs no more to be renewed there see his words in his Philosophicall Principles of naturall religion pa 86

The second continually draws the Celestial Body from its rectiliniar motion and forces it into a Curvilinear Orbit so that it must be repeated every moment of time

Opposition in sence Men is to reigning a Principle that they run head long into Blunders from whence this false reasoning should come seems strange unless begot by Pride, and envy in pulling a greater down, to sett himself up to ride in Triumph. Some Old opinions have been rectified and debased We should not despise all old opinions and adore the new tho' generally applauded but examine both pick out the truth from each and abdicate the Errors as a mark to avoid them but ever be led by truth

Mean flattery in every one (weak in the Head) too often acquiesce to things he little understands but to seem knowing, applauds, magnifies, and flatters the Genius of the age. to glose himself as one in his rank amongst the applauded Grandees who reign with a despotick power inslaving reason in prisoning and putting truth out of countenance whensoever

whensoever it shall dare to rebell, or break in upon the comon
wealth they have established. Thus the Kingly government of
Truth, by a proud bold upstart Subject (for all should be governed
humbly by Truth) gathering a Faction (as a snowball increases
by rowling on) swells and looks bigg and may last for a time
it may be proportionate to its bulk. Yet the Soveraign Majes-
ty of Truth like the sun in Power with warme comming
rays melt the huge fluid vapor of congregated faction
Dissolve it to Lethe down to its first Principle a fluid,
Cold made the Subject swell when its Prince was gone
a distant Journey so rebells incongruelling with Pride and
Ignorance whilst in the Dark unperceived hatch and
set up a Comonwealth against Reason truth and the laws
of nature only to reign as boldly for audaciously not to
be baulked they cut the Gordian knot they cant untie

For Because our modern sages as well as the Antients
could never divide the Circle ad libitum Geometrically they
despaired ever to make the Curve and strait line angle agonly
agree together so they swerved from the Antients who al-
lowing Gravity, to matter only, ever tending to the centre
of rest which nature simply with pure advice seemed
to direct us — to in all things which lie within the human
reach of Demonstration but our Sophists resolving to
overcome all difficulties They hatch up a monster strain
or distort nature to comply wildly to
their extravagant lame Hypotheses instead of forming
their Hypotheses to explain nature by its own laws (rather
than to be found ignorant in whatever they undertake)
makes laws of their own which none but such who resolves
to have it pass for Truth (to screen their Ignorance) ever can
believe

believe since Nature her laws are pure, simple and few, with uniform-
:ity in all its ways each step leads on harmoniously to the end 41
no chasme in all her works no preposterous discording Attempts
to delude mankind, whose finite reason cannot soar so high
which even nature is unchapable to fathom the depth, nor be-
:leive if he does but humbly think and not with Pride fall
in with these modern sophists who would be thought the
only great Philosophers amongst the Ignorant because
they surpass human reason nay nature itself in sur-
:prising prodigious monstrosities some of which are these
first the Comets which we have not had three to
prove their Assertion, the Earth revolving instead of
the sun in the Ecliptick in contradiction to Ptolemy,
the Centrifugall and Centripetall Impulse instead of
or) Gravity, Eliptical Orbits in the Motion of the Planets,
infinite worlds and all attracting each other to keep
their own station and because they cannot answer
the demand they boldly forbid all the world beside to
attempt att Impossibilities since they themselves vain-
foild in attempting it ergo no comon measure
or number can be given which shall divide the side
of the square and its diagonal without a remainder
being surds as they call them, the squaring of the
circle, also they call these two last desperata's, be-
:cause they can't find the means how to solve them
they positively forbid mankind to labour any further
in Impossibilities which must be such when they them-
:selves can't explain them as if all thinking in the world
were only settled in their Numericall Perieranium

I wond

I would not here be misunderstood as if I spoak meanly of
or had but an ill opinion of numbers which I think an excel-
-lent understanding subject to its Princes Geometry I only
dislike those managers who place numbers in the van
when they ought to make it only bring up the rear as an
adjutant to Geometry a servant to obey its leader, wings
att Head and Heels with celerity to expedite comands -
when it sets out by orders right att first, but if a point
wrong then (in goeing Head long on its own accord) the
farther it goes the error Infinitely multiplies, tis a mean
Ignis Fatuus which misleads the mind from truth,
so far lost and out of sight blind and uncapable to -
spin a clue of thread to bring it back from the field
of Bellerophon which lies near to Lea the wherein it -
plunges and is forever lost

To explain the great opinion I have for Arith:
:metick when seated in her proper station, is to shew
how faithful a servant she can be in her own Post
is to demonstrate here underneath that a comon
measure or number being given to the side of a square
Arithmetick can produce or find another number
and the same comon measure shall divide the diago-
:nall without a remainder then their fore is va:
:nished and they are blindly in the wrong q.e.d.

A Rule how to find a Comon measure or number which
shall divide the Root or side or fourth part of the Included
square, the Quadrant or fourth part of the Circle the Dia:
:gonall or fourth Part of the square made of the Circles
Diameter

vi. 45. 50. 53. 60. 77. 103. 109. 120. 152.
and see 2 on the other side

	7			15			28		
1	7	8	10	15	17	21	28	32	40
2	14	16	20	30	34	42	56	64	80
3	21	24	30	45	51	63	84	96	120
4	28	32	40	60	68	84	112	128	160
5	35	40	50	75	85	105	140	150	200
6	42	48	60	90	102	126	168	192	240
7	49	56	70	105	109	147	196	224	280
8	56	64	80	120	136	168	224	256	320
9	63	72	90	135	153	189	252	288	360
10	70	80	100	150	170	210	280	320	400

	Root	Curve	diag	Root	Curve	diag	Root	Curve	diag
1	14	16	20	21	24	30	30	34	42
2	28	32	40	42	48	60	60	68	84
3	42	48	60	63	72	90	90	102	126
4	56	64	80	84	96	120	120	136	168
5	70	80	100	105	120	150	150	170	210
6	84	96	120	126	144	180	180	204	252
7	98	112	140	147	168	210	210	238	294
8	112	128	160	168	192	240	240	272	336
9	126	144	180	189	216	270	270	306	378
10	140	160	200	210	240	300	300	340	402

14 21 30

	36		
1	36	41	51
2	72	82	102
3	108	123	153
4	144	164	204
5	180	205	255
6	216	246	306
7	252	287	357
8	288	328	408
9	324	369	459
10	360	410	510

These seven Tables are the lowest numbers that will adequate together with the same measure to divide the root or side of the square, the Circle and the Diagonal exactly without any remainder. All the numbers under seven as roots there can no curve nor diagonall be found to adequate with them, nor no number between seven and ~~thirty six~~ but only those seven above ~~thirty~~ inserted viz 7. 14. 15. 21. 28. 30. 36. for (8. 9. 10. 11. 12. 13. 16. 17. 18. 19. 20. / 1. 2. 3. 4. 5. / 22. 23. 24. 25. 26. 27. 29. 31. 32. 33. 34. 35.) to these ~~three~~ and / 7. 8. 9. 10. 11. / twenty 12 13 16 17 18 19 20 21 22 23 last numbers as roots, there can no Curve, or diagonal be found

Root Curve Diagonal
7 . 8 . 10 —

1st Divisor 6 | 7 1st Dividend from square root
1st Quotient 1 subtracted from 1st Dividend
2d Divisor 2) 6 remainder divided by 2
3 Quotient } added together
7 square root } gives 10 the Diggonall

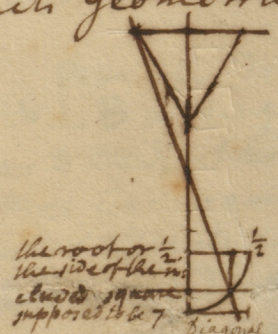
3) 3 | 2d Quotient divided
1 By 3 gives 1 which
7 added to 7 a square Root gives
8 —

13: Third mi diagram

be found or given to answer to them without a Fere. Ergo it is Demonstrable that these seven Numbers viz 7. 14. 15 21. 30. 36 are the only prime numbers as roots from one to thirty six, that will Harmoniously agree in concord to be divided adequately with the Curve and Diagonal by one comon measure for all the rest will leave a remainder

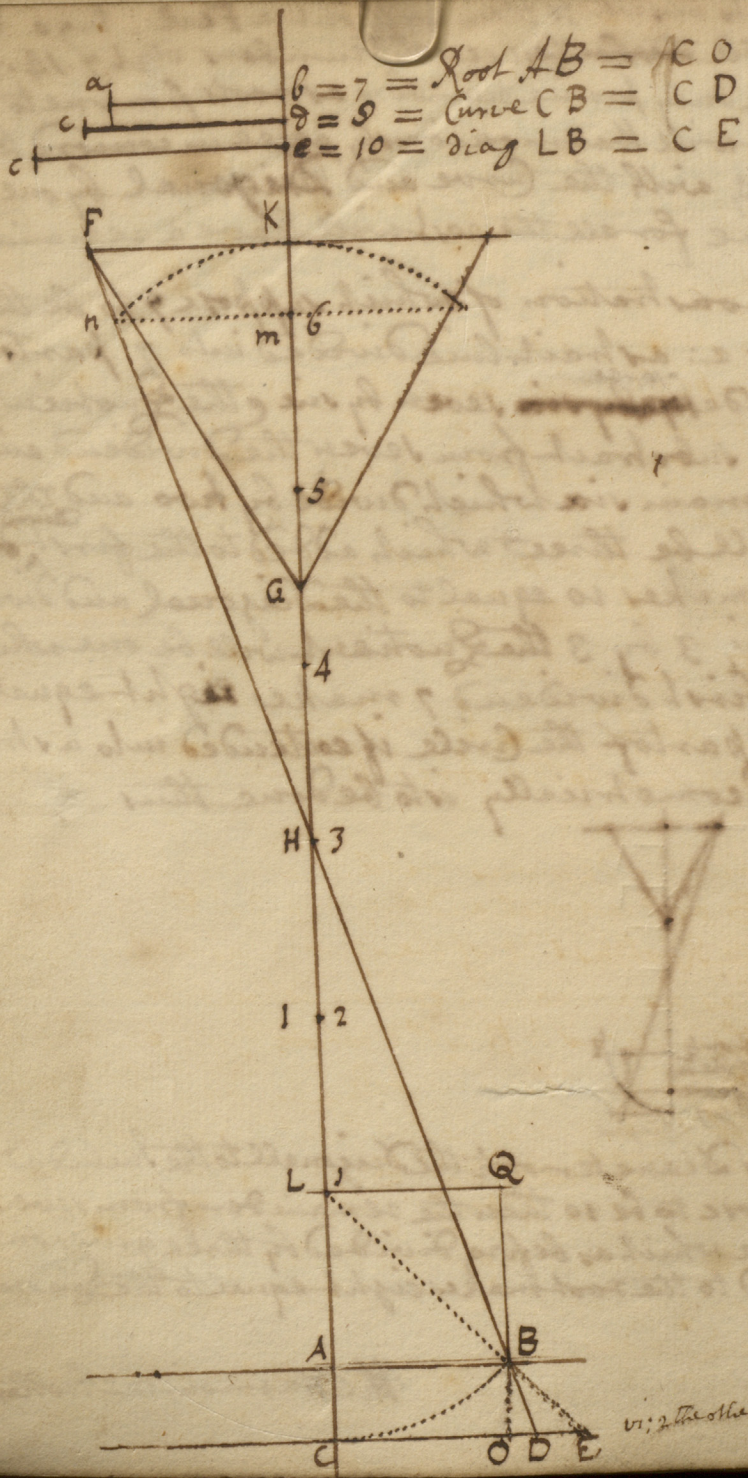
To the Demonstration of which suppose 7 to be the first root i: e: a strait line divided into 7 parts

Then Divide seven by six the Quotient will be one which substract from seven the Dividend and there will remain six which divide by two and the Quotient will be three which added to the first Dividend seven the sum makes 10 equal to the Diagonal and divide the second viz 3 by 3 the Quotient will be one which added to the first Dividend 7 makes eight equal to the fourth part of the Circle if extended into a strait line which Geometrically is to be done thus



½ the Circles Diameter or ½ the Diagonall to the Included square supose to be 10 then the remainder from seven will be three which as before divided by three gives one which added to the root makes eight equal to the Quadrant

The Harmonical Problem



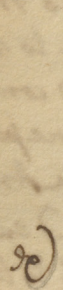
vi; 2 the other side vi 43. 53. 63. 73. 50. 103. 108. 128. 152

Here is a Lema laid down how to square the Circle as also to give a comon measure or number that shall measure the root or side of the square and its Diagonall without a remainder and a strait line equal to the Circle just to divide it ad libitum

Ad libitum make a strait line A B: on which from A take A B or A L and carry it six times upwards to m and make a perpendicular from A to m and from m to n = to A B and from n lay a Ruler through H to B and continue it farther, then make the square L A B, so set one point of your Compasses in L and the other to B and strike the Arch B C and from C strike a parallel to A B as C E and extending L B till it cut the lower base at E = to the Diagonal L B, also extending the line H B: till it also cuts the lower Base at D will be made equal to the Arch B C when extended equal in a strait line to the Arch B C when extended

Now this demonstrates that the lower base C E is = to L B as Diagonal and major and A B the upper base is = to the Root as side of the square as minor and that C B the Arch lies as a mean in comon between both and is the eigth part of the Circle as A B is the eigth part of the whole square included in the same circle C B: as C E is also the eigth part of the major square which circumscribes the Circle as the major and extend L B till it cut the lower Base in O then C O: is equal to A B thus the lower base will be divided so as the minor and major are the two extreams and the mean lies between them both on the comon base proportionally and equal to the Quadrant

NB: Divide C D: ad libitum and E G and H I into the same number of parts and lay a Ruler from one to the other and the ruler will at the same time intersect the limbe of the Circle into adequate number of parts q. e. d.



† from which any angle may be trisected or the Circle squared

+ and then with a haughty Pride not to be baffled or scan Ignorant it cuts the Gordian knott it should untie or

The Properties of the Harmonical Doobleen

(46)

In this Paper is laid down the ground Plat of the laws of Harmonicall motion between the Sphere and Cube, demonstrated by their representative plane forms vizt the Circle and the Square which also gives a comon measure or number which shall divide the side of the square and its Diagonal without a remainder and also give a strait line equal to the Periffery of the Circle ☞

03 The perfectly Geometrical Principles which shew the way how numbers shall set out right att first for if the Question be stated wrong ~~att first~~ in the beginning of your process by numbers will lead you into Infinite Error unperceived, but as a nimble stout Champ (wing'd at Head and Heels taking comand from its certain all-knowing Commander Geometry, tis then capable truely in an Instant to carry the search to the utmost bounds of humane perception. But of it self presumptuously going without the precepts of its guide, it wanders in a maze of infinite multiplying errors, benighted grovels in the darkmeanders of weak apuming reason for a time but must att last be headlong plunged in the deep waters of obscurity which its own self raised, sink and be lost by degrees in despicable oblivion or abhorrence, of turning the World topsy turvy But setting out right att first it is a glorious nimble agent which can do wonders fit to be admired and intrusted yet still to have a watchful Eye least by too much speed it is bewildered and then with haughty Pride we cut the Gordian knott ~~we should untie~~, which hitherto has been the Case

& imitate or make use of the names of the three Destinies of the Ethnick Philosophers namely Lachesis who holds the Distaff (the youngest of the three) whilst her sister Clothio spins the thread which Atropos cuts off which may allegorically express us &

† supposing it to reach from the Zenith to the Nadir

‡ The third space or line on the Zenadir line from & to V is call'd time ‡

se)

* as Clothio has run over on the Circle Z X Z as 1 2 3 4 5 so that the Ruler Atropos divides not only the strait line space or ½ of the base namely 5 K into four parts, which is the eighth of the square B K D E but also the eighth part of the Circle Z X Z at the same momentous action of Intersection being divided into four equal parts at 1 2 3 4 5 on the Periffery of the Circle Z X Z which if extended strait would be in length equal to the half base, or the strait line 5 K called space so that the square B K D E is equal to the Circle Z X Z by supposition *

the Case hereunto annexed and

A scheme of the machin being truly represented and marked throughout its members to explain myself I shall here & imitate the names of the Attick Philosophers which will allegorically express my meaning in a shorter method and as Intelligible as many words

The Perpendicular to the Base from M to L I call the Lenadier line † †

The Equilateral Triangle I name Necessity

‡ The space on the Lenadier line in the middle att L to the point or beginning of Adrastea I call Time ‡

The right Angled Triangle underneath I call A: drastea the Daughter of necessity

The three Rulers marked A B C like the fatall Sisters I name Clotho, Lachesis, Atropos,

Lachesis is holds the Distaff in the Lenadier line whilst Clotho with her point K moving on spins the thread of the strait line or base B K (named space) and Atro: pos follows her to factation att the point K and cuts off equall spaces here, * or any space ad libitum on the Circle Z X Z as 1 2 3 4 5 so that the Ruler Atropos divides the strait line space which is the Eighth part of the square B K O E and the eighth part of the Circle Z X Z att the same momentous action of intersection which is divided into equal parts, for 1 2 3 4 5 here (or into what parts you please) on the Periffery of the Circle Z X Z if extended strait would be in length equal to the half base or the strait line 5 K called space, so that the square B K O E is equal to the Circle Z X Z by supposition * Or

* to the Immediate view

w Let the square QXY be given the side of which let it be
equal to 72 what number will the Diagonal have of
equal parts without a remainder w

◊ the base BK I call space and is the 8th part of the square
BKDE and equal to the eighth part of the Circle ZXZ -
which is to be proved ◊

& The numbers 12345 on the Circle ZXZ make
the 8th part of the Circle it proves itself &

◊ The side of the Equilateral Triangle is equal to
the whole length BK or side of the square BKDE and
oe) double to 4K ◊

PY is equal to NW

Or what is much the same thing the Circle FGH is equal 45
to the square PQXY also by supposition but seems much more
visibly equal, by reason its square is more uniformly posited with
the circle to prevent view

ω The square PQXY is given the side of which let it be 72
Query what the Diagonal is ω

ɔ Half the Base of the square BKDE as 5 K I call space which
is the eighth part of the square BEDK equal to the eighth part
of the Circle ZXZ which is to be proved ɔ

ɔ & On the Circle ZXZ the numbers 1 2 3 4 5 altogether
make the eighth part of the same Circle visibly, and also is
supposed if extended into a strait line is equal to the eighth
part or side of the square BEDK which is to be proved. &

ɔ The side of the Equilateral Triangle is equal to the
whole side of the square B K or equal to the side or fourth
part of the square BKDE ɔ

Let BK be the side of a square divided into 72
parts how many of those parts shall the Diagonal take up
without leaving a remainder

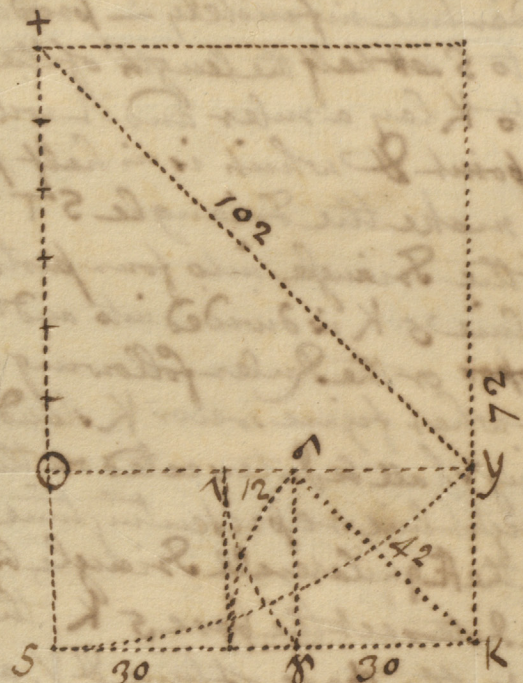
The Question to what as yet is known is not to be
answered yet I think it is to be resolved

The square being given whose side is equal to 72
how many shall the side of the Diagonall square take up
of the same comon measure or equal parts without a remain-
der

Let B K the whole base be 144 and 5 K half the base
S D be 72 which taken in your Compass and sett off from the
upper base A 5 at the point ⊙ six times on the Perpendi-
cular or Perpendicula on which Lachesis is writt and it
will reach the Triangle at the point M

so —

So likewise take half BK as 5 K in your Compasses and set off (from your lower Base att A 5) six times on the aforesd Perpendicular and it will reach the top of the Equilateral Tri-angle att the Point K then draw from K a perpendicular to the Lenander line infinitely — produced — both ways and from K to S set half the length of the Base viz 5 K and from S to K lay a ruler and it will cut the Lenander line att the point T which is ye half produce K to T and of S T make the Triangle S T WA and divide both sides of the Triangle into four parts as many as ye ½ of the base line 5 K is divided into and then move Lache-sis and Atropos or the Ruler following her to touch her point K att what figure soever K stands the same figure corresponding shall be intersected on the Circle, on the space of the right line representing time marked V called time, and on the Equilateral Triangle, by the Ruler Atropos which shall intersect the base 5 K, the the 8th part of the Circle 5 Y, the space of time, V, and the side of the Triangle S W, all four in each of their corresponding figures att once, viz if Lachesis her point K is moved from 1 to 2 and the Ruler Atropos follows it to be coin-cident to the point K it shall intersect all the four 2s att once and so through all the rest of the figures Or let the base line 5 K be divided into any number of parts either aliquot or aliquant ad libitum move the two rulers as before to each division it shall devide att once the 8th part of the Circle, the place of time, and the side of the Triangle into the same similar parts each in themselves respectively att once Let a



Let a square be made of the line ⊙ ♈ and set one point of the Compass in + and the other extended to ♈ which is the length of the Diagonal to the square + ⊙ ♈ and from ♈ make a sweep of an Arch ♈ 5 then I say ⊙ 5 shall be the surplus or difference of the Diagonall being greater than the side of the square: from 5 strike a line parallel to ⊙ ♈ and let fall a Perpendicular from ♈ to K

vide the other side vi: 53. 73. 68. 48 45. 103. 108. 128. 152

Let a square be made of the line ⊙Y and set one point of the Compasses in + and the other extended to Y which is the length of the Diagonall to the square +⊙Y and from Y make a sweep of an Arch Y S then I say ⊙S shall be the surplus or difference of the diagonall being greater then the side of the square

And of YK make a square as YKγδ then I say set one foot of the Compasses in Y extending the other to γ and make the sweep of an Arch as γλ then I say at λ let fall a Perpendicular it shall divide the whole Area ⊙YKS into two squares and the Interstice between the two squares from λ to δ shall be one sixth part of the side ⊙Y The which being known to be 72 which divide by six 6)72(12 is given for the Quotient which substracted from 72
12
remains 60 which divided by 2
gives 30 equal to the surplus or one of the sides of the little squares which added to 72
30
make 102 equal to the Diagonal
Wherefore six is a comon measure which will divide the side and the Diagonal without a remainder q:e:d: for 6)102(17
42
0

Or in numbers thus let the side of the square be 72 which divide by six 6)72(12 then substract the Quotient from the Dividend as 72 then divide the remainder in half as how oft 2)12
60(30 which quotient add to the side of the square as 72
30 make 102 = to the Diagonall

Suppose

Suppose the Diagonal given and the Root or side (61
of the square sought in numbers, let the Diagonal be as
before 102

Divide 102 by 5 as how oft 5) 102 (20 which —
(2)
quotient add to the Dividend 102
20
tot 122 which divide by four
4) 122 (30 which substract from the first Dividend as 102
(2)
30
to the Root or side of the square q: e: d: remain 72 =

Thus any Diagonal given the root also
may be found of which I will here give an Example —
Suppose 34 to be the Diagonal what is the root do
as before divide 34 by 5 as how oft 5) 34 (6 which —
(4)
Quotient add to the dividend 34
6
tot 40 which divide by four
4) 40 (10 which substract from the first Dividend as 34
(0)
10
remain 24
= to the root or side of the square q: e: d: which is evident
for multiply 24 by three and multiply 34 by three
3
72 as before is the root to 102 q: e: d:

From a side of a square or root given how to find the Diago-
nal sought (52

Let 6 be a comon divisor and suppose the side given
be 12 24 or 72 or any other number that may be half taken
from it in whole numbers (tho it will answer even in fractions
as I note by but not so demonstrable to comon view) suppose
the side be 12 given which divide by 6 then substract
the Quotient 2 from the Dividend and there will
remain 10 wheeh half viz 5 add to the first Dividend
will make 17 equal to the Diagonal sought in number
thus

Side
6)12(2 : 12 12
(0) 2 5
2)10(5 17 = Diag
(0)

de

From the Diagonal given how to find the side or
root sought

Let 5 and 4 be the comon divisors and suppose
17 to be the Diagonal given as above found which divide
by 5 and add the Quotient to the Dividend and divide
the Product by 4 and this last Quotient substract
from the first Dividend viz 17 and the remainder
shall be the side or root sought In numbers thus proved

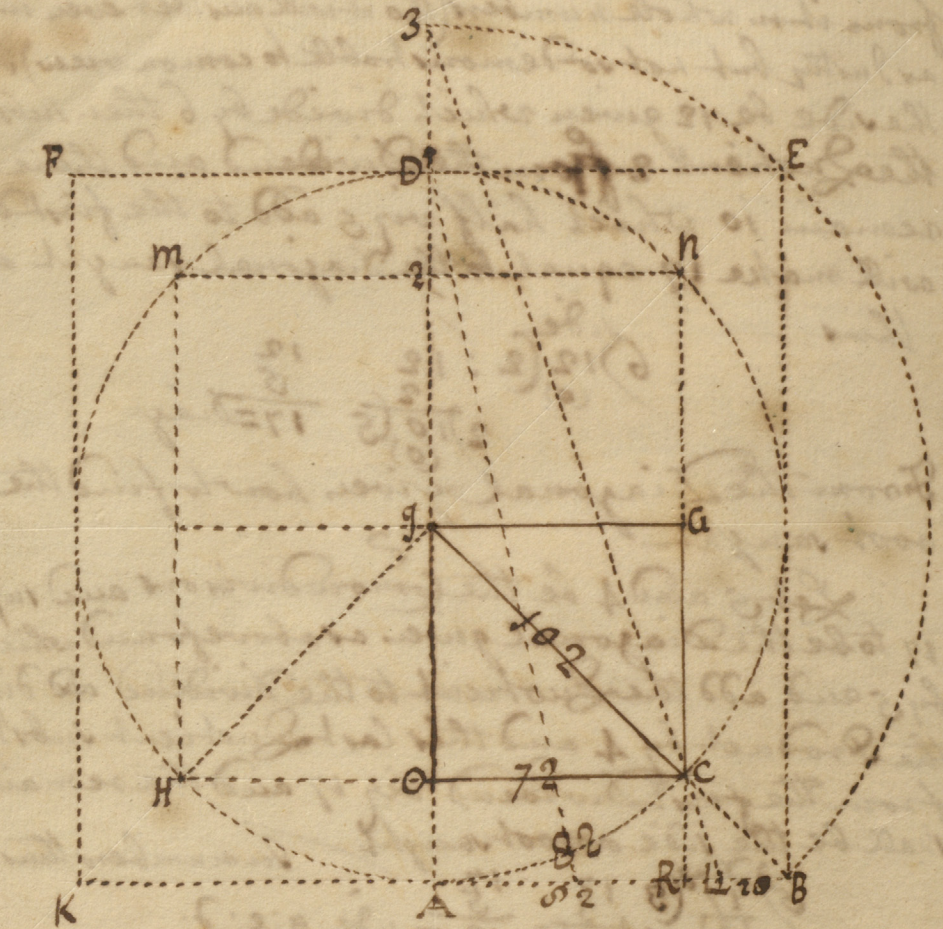
Diag
5)17(3 17 17
(2) 4 3 5
4)20(5 12 = side q: e: d:

Or suppose the side or root given be 72 do as above

Side
6)72(12 72 72
12 12 30
(0) 2)60(30 102 = diag

The Proof of which is demonstrable by the foregoing problem
of the root 12 for multiply 12 by 6 as 12/6 72 = q: e: d:
On multiply 17 by 6 as 17/6 102 = Diag

106



vi: 43. 45. 50. 68. 73. 103. 108. 128. 152.
and see 2 the other way and in the fo: Book

So 6 you find to be a comon number which will divide the side and the Diagonal without a remainder

Supose the Diagonal 102 given 5)102(20 102 102
2a 30
4)122(30 72 found

Now having found a Comon measure or number which will divide both the side and diagonal without a remainder our next endeavour shall be how to give a strait line equal to the Circle which I do thus as follows

¶ Having demonstrated that the side or root is comensurable with the Diagonal by one comon measure or number and considering that the limb of the Quadrant viz C A H lies comon between the upper and lower base which are Parallels the lower base being a Tangent to the Circle and equal in length to the Diameter of the Circle the square of which inscribes the Circle therefore is consequently bigger and the upper base H. C. is the bottom of a square which is inscribed within the Circle therefore consequently less therefore if a strait line ought equal to the Circle it must be by the Assistance of these two Bases as two extreams between which the limb of the Quadrant lies in Comon and considering the limb H A C is one 4th. part of the Circle and the upper Base H C is also one 4th. part of the lesser square H M N C and the lower base K B is also one 4th part of the bigger square K E F B there must be a point in the lower base which may be found to give a just length thereon equal to the limb of the Quadrant when extended. I C is the Radius to the lesser Circle and Diagonal to the little square and equal to

A B =

A B = half the lower base and I B is the Radius to the bigger Circle the top of which reaches to 3 and laying a Ruler from 3 to C extending your line till it cuts the lower base att L then I say from A to L shall be the length equal to half the limb of the Quadrant that is equal A: 82 : C: for A L is 82 I prove thus A B the halfbase is equal to the radius or the Diagonal I C which is 102 A R is equal to O:C: that is equal to 72 then consequently R B must be equal to 30 and R L is one third of R B that is ten which added to A R: 72 makes 82 = to the Arke A: 82 : C and that A L is equal to the Arke A: C: I prove thus divide line A L into what parts you please if you divide also the line 2:3: into the same aliquot parts as supose each line be divided into 45 6 ex aliquot parts in number alike and a Ruler laid from one to the other to each respective similar part the ruler att the same time will cut the Arke A: C: into 4:5:6: ex the same aliquot or similar parts as the two strait lines are divided in, even to Infinity

When the upper and lower bases are given in number 'tis easy also to find the number also of the Arke A C thus

Supose the number of the upper base be 72 and the lower base 102 substract the one out of the other and divide the remainder into 3 parts and add one third to the leper base or substract two thirds from the bigger base 10 Substract 72 from 102 $\frac{102}{3}\overline{)30}(10$ $\frac{72}{82}$ equal to the Circle

9: 8: 2

Having gone thus far our next step is to give a Circle equal to a square demonstrably proved
It is to be remembered that to every ten in the side there must be added 4 to make a diagonal as for example supose ten is the side of a square given add $\frac{10}{4}$ to it will give the Diagonall which will be 14 = diag. And if there be unites added to a Decimal as supposs it be 2 added to 10 which makes 12 then adding 4 for the ten in twelve understand 1 more 4 under the 4 and add them up and they make 17 equal to the Diagonal

Note for every two unites one must be added

Suppose the eighth part of a circle be given what part or number in Inches or any other measure as feet yards and what of a Comon measure without a remainder shall that Ark take up (if it were stretcht out into a strait line) on the Circles tangent line equal to its Diameter suposing the Diameter were 102 known or given, do thus

first taking $\frac{1}{2}$ your semidiameter 102 of the Circumscribing Circle viz for the Diagonal to the Inserted little square as it in ese is, seek out the length or number of $\frac{1}{2}$ the inserted side of the square which as above is 72 Now I have shewn above how that 6 is the Divisor to the side in finding the Diagonal and 5 and 4 is the divisors to the Diagonal in finding the side (and since a meanline as the Ark is lying between the two extreams viz the upper base 144 and lower base 204, $\frac{1}{2}$ of each is 72: 102 and a mean line between these two is sought it must be found by bleading the afore

this copied from the same paper with pa: 161

* q. if the words (and depth) are not wanting here

the Effects of these two numbers together that is add their two divisors 6 & 5 which gives 11 which make your divisor to 102 saying 11) 102 (9 then add your divisor & quotient together which is 20 and substract it from 102

Vid: Verulam That men have not drawn forth advancement of Learning the Common forms of things p: 130 Natural from Particular Instances; which is the proper subject of Metaphysicks, which is it self a part of Physic, or of the knowledge of Nature. Therefore there be Inquiry made of the Form and Originals of Light, and in the mean time it may be placed among deficients

A Globe of Light, is the sun which as to motion or power is a simple uniform undetermined Agent its rays are sent by an infinite expantion every way from a pure simple Ens the Symbol of Infinity in orbem How to adjust these infinite rays to a finite form of a Cube a strait line of a determined length long has been the endeavours of the best and most learned Philosophers

Caust motion fix? count sands? recal past days?
Shew Height, Breadth, length, oth' spreading ray?
dicardinate the sphears? and rapid Whirlwinds stay?

vide Theophila: pa: 63

The Traine i: e: Intermediate

N.B. This not an original of any Medal but Copied by him from one in print

A description of the Spherical Quadrant shewing the Principles whereon it is grounded with an account of the uses thereof in Sailing

This Instrument is for the Improvement of Navigation the true art and knowledge whereof hath been a subject of great curiosity for some ages wherein much labour and study hath been Imployd to make a science so necessary and so conducive to the promotion of Traffick & comerce both certain and practicable: and altho' many rules and methods have been directed for the general use and benefit of Navigators; and many books have been publish'd and variety of Elaborate Tables have been composed, and several Instruments invented for Instructing the manner in the right skil of sailing; yet what hath hitherto been taught and writ: ten on this subject being to be perform'd by the difficult operations of Logarithms, signes, Tangents and Secants, or otherwise and abstruse calculation of Numbers, and the true reasons and Principles thereof being often mistaken than rightly understood: Most mariners have been discouraged from depending, on such reckon: ning, and have declined the performance of their voya: ges by the skilful way of Mercators sailing and wholy governed themselves by the rules of plain sailing, which the Mathematick Teachers have declared to be erroneous and dangerous

These considerations have given occasion to the Invention

Invention of this Instrument which is contrived to answer 50
these propositions

first that the Earth and water make one perfect globe and that all the motions of a ship in Sailing are spherical and made on the Arch of a Circle

secondly, That every place on the Globe thus distinguished from the Poles, by the Circles of Latitude made round the Poles gradually to the Equator, and by the Circles of Longitude that are drawn through the Poles cross the Equator and thereby cutting each other att right Angles, determine in a point the certainty of any place from either of the Poles by the od particular Latitude and Longitude ascribed thereto

Thirdly, That every place on the globe thus distinguished from the Poles, by Latitude and Longitude are likewise distinguished from any other place by Circles drawn gradually round that other place or Zenith to the Horizon thereof, and by Circles drawn through the Zenith and Nadir of that place cross the Horizon which cutting each other att right Angles determine in a point the certainty of such second place from the first place after the same manner

These being the Principles on which this Instrument is grounded a Description thereof will shew the purposes for which it was contrived

It is composed of three quadrants of Equal demension whereof each Radius is two foot more or less att discretion the

Inches

Arches of each quadrant being divided by 90 Degrees, and each Degree by twelve parts, containing five minuets each one

One of which Quadrants lieth Horizontally, and is the Basis to the whole Instrument, representing a fourth part of the Equator

The two other Quadrants ~~lieth Horizontally~~ are so placed that one side of each Quadrant lieth on the lower Quadrant from the Center to the Arch there all three of them joining in a point, and represent the Center of the Earth, and measure the same diameter of the Globe from the Center thereof to the Equator; the other two sides stand perpendicular, and measure the semidiameter of the Axis from the Center of the Earth to the Pole; And all three of them being thus placed represent a quarter part of the Hemisphere

These two quadrants thus perpendicularly placed, are so made to turn on the Axis, that they may be set to or from each other at any distance on the Arch of the lower Quadrant, and represent any two Meridians on the Arches whereof the Latitudes are distinguished by degrees and minuets, as the Longitudes are upon the Arch of the lower Quadrant

There is also a semicircle made on a thin brass plate about four Inches Diameter, which is divided by twice 90 Degrees, beginning from each end of the semicircle representing one half of the Compass from North to South, and is parallel to the Horizon

Which Semicircle is so made to slide on the Arches of either of the Meridians. That the Center thereof may be set to any Latitude required, and represents the Zenith

There is likewise an Arch of a Quadrant of the same Dimensions

mensions with the other Arches, and divided by degrees and minutes
in the same manner and represents the fourth part of the Azimuth
or vertical Circle, and passes through the Zenith and Nadir, which
Arch is moved at the upper end thereof on the Center-pin of the
Semicircle; having a small Index fixt thereto about two Inches
long, which shews upon the Degrees of the Semicircle how the
Azimuth Arch is to be moved to represent the bearing from
one place to another And by the Degrees that will be cut
on the Azimuth Arch, to shew the distance between them

Now the use of this Instrument in sailing is to direct
the Mariner, when he is to sail from one place to another.
what is the true bearing of that place to another? what is
the distance between them? and by what degrees of the
Compass he is to steer to bring him to his intended part!

- Which is to be performed in this manner

If the Course be westward, Let the right Hand Meridian
can be fixed, on the right Hand side of the lower Quadrant
and suppose that to be the Longitude of the first place,
then let the Semicircle be moved along the Arch of the
Right Hand meridian, till the Center-pin rests on the
Latitude of that first place; then let the left hand
Meridian be moved on the Arch of the Lower Quadrant
towards the right Hand Meridian to the difference of the
Longitude between the first and second place; so will
the Degree on the Azimuth Circle that cuts the left Hand
meridian shew the distance between the first and second
place, and the Degree on the Semicircles that is cut by the
Index will shew the bearing from one place to the other and
thereby

thereby shew what degree of the Compass the Mariner is to steer by but if the Course be Eastward the Contrary operation must be performed in all respects

Another use is when a ship has sailed 24 hours more or less from the place of departure, to shew by the Course and Distance what Latitude and Longitude the ship is arrived to

As if the ship had sailed 120 Miles, or minutes on the 45.th Degree; or South West point of the Compass. The Index of the Azimuth Arch being set to 45 Degrees on the semicircle, and the left Hand Meridian being brought under the Azimuth arch 'till it be cut at 120 minutes or two Degrees; the same Meridian will be cut by the Azimuth arch at the Latitude arrived to, and the lower Arch will be cutt by the Meridian at the Longitude arrived to

And after this manner, all the Problems in sailing that may be resolved by Trigonometry may be demonstrated and reduced into practice by this Instrument; which performs many other useful things that are here omitted being proper for particular Instructions by Mathematick Teachers

This only may be added in generall, to recomend the use of the Instrument that it may be used in all weathers at sea, and all times, by Day or Night

That it is consistant with all the approved rules of sailing and may be examined by those rules, and they may be a Confirmation of each other

That all the operations are performed without the help of any Tables, or use of any Arithmetick; save only to compute the several degrees and minutes on the several Quadrants, as they are cut by each other, when set to any position required

That it

That it shews the true way of Circle sailing and renders it (62
more easy than Mercators sailing, and more certain than plain
sailing. and so truely and plainly resolves all problems relating
to Course and distance, Latitude and Longitude: That all Mariners
by a short and easy Method may be fully instructed thereby, in the
Art and practices of Navigation

begining Sept.r 1711

This was taken from another imprint by my Uncle
in none of his own

It is worth while to search out the Bounds betweeu truth
and error in Objects out of reach and examine by what measures
in things out of sight, we ought to regulate our proceed to come
att simple truth in order whereunto I shall pursue this following
method

1. I shall inquire into the Original appearances of those Objects or
whatever else you please to call them which a Man observes with
his Eyes and is conscious to himself he sees, and the ways where
by the Eye comes to be furnished with them

2. I shall endeavour to shew what operation is made on the
Eye from those Objects or appearances and the certainty
Evidence and extent of it

If Infinity makes use of the Ideas and Repetitions of Numbers in addition or division of Miles or years which our so many distinct Ideas kept only by number from running into a confused heap wherein the mind loses itself in the confused incomprehensible remainder of endless addible numbers which affords no prospect of stop or boundary

it will perhaps, give us a little further light into the Ideas we have of Infinity, and discover to us, that it is nothing but the Infinity of Number applied to determinate parts of which we have in our mind the distinct Ideas, if we consider that number is not generally thought by us infinite, whereas duration and extention is apt to be so; which arises from hence that in number we are at one end, as it were: for there being in numbers nothing less than an unite; we there stop, and are at an end; but in addition or increase of Number, we can set no bounds: and so it is like a line whereof one end terminating with us, the other is extended still forwards beyond all that we can conceive; but in space and duration it is otherwise. for in duration, we consider it, as if this line of number were extended both ways to an unconceivable, undeterminate, and Infinite length; which is evident to any one that will but reflect on what consideration he hath of Eternity; which I supose he will find to be nothing else, but the turning this Infinity of Number both ways, a parte ante, and a parte post, as they speak. for when we would consider Eternity a parte ante, what do we —, but beginning from ourselves, and the present time we are in, we repeat in our minds the Ideas of years or ages, or any other assignable portion of duration past, with a prospect of proceeding in such addition, with all the Infinity of Number; and when we would consider eternity a parte post we just after the same rate, begin from ourselves, and reckon by multiplied periods yet to come still extending that line of number, as before; and those two being put together,

are

are that Infinite duration we call Eternity; which every way we consider appears Infinite, because we still turn that way the Infinite end of number, i.e: the Power still of adding more

Lock 106 page

So much space as the mind takes a view of, in its Contemplation of Greatnes, is a clear picture and positive in the understanding; but Infinite is still greater: then the Idea of so much is positive and clear. 2 the Idea of greater is also clear, but it is but a Comparative Idea 3 The Idea of so much greater, as cannot be comprehended, and this is plain negative: Not positive for he has no positive clear Idea of the largeness of any extention (which is that sought for in the Idea of Infinite)

Thus the Orthographicall view of a Plane that the Eye takes a view of by an Angle of 90 in orbem is a clear picture to the utmost extention stated and positive in the understanding but Infinite is so much greater yet coequal to the sides of the Optical Cone of the Eye taking in the angle of 90 in orbem

Cor: from hence I gather 'tis not absurd to say that every plane (having its proper distance from the Eye by the extream rays making the Angle of 90) is a whole or Plenum coequal in all its parts to infinite extention altho the plane be limited to a foot, a yard, or what other dimension you shall determine this seems a Paradox but may be demonstrated

Cor Also it is possible to extend the two extream rays of the Cone to double treble or any length whatsoever still capable of Addition even to Infinity if it were possible to conceive such an Idea the sides of the Cone would still be strait Lines and the Angle equal and ever the same and also the plane which we will call the proximate plane is any one will say capable of divisions as into 2345 10 100 1000 and so on without a stint since the minutest part

part may be supposed to be divided ad Infinitum and each Divisi(65
on the Proximate plane shall have the same Angle will any other
Parellel Plane with in the same Cone where soever placed even
(If I may so say) att the other extream of Infinite extention it-
-self the one will be consonant to the other and when you
divide the one the other shall be consequently be analagously
divided by the same line and that line tho' infinitely extended
shall be to the Eye but as a point which I call an Infinite point

q:e:d:

There is two points or a point { Limited / Infinite } { which in other words is no: -tion is a line } { limited / Infinite }

Thus demonstrated

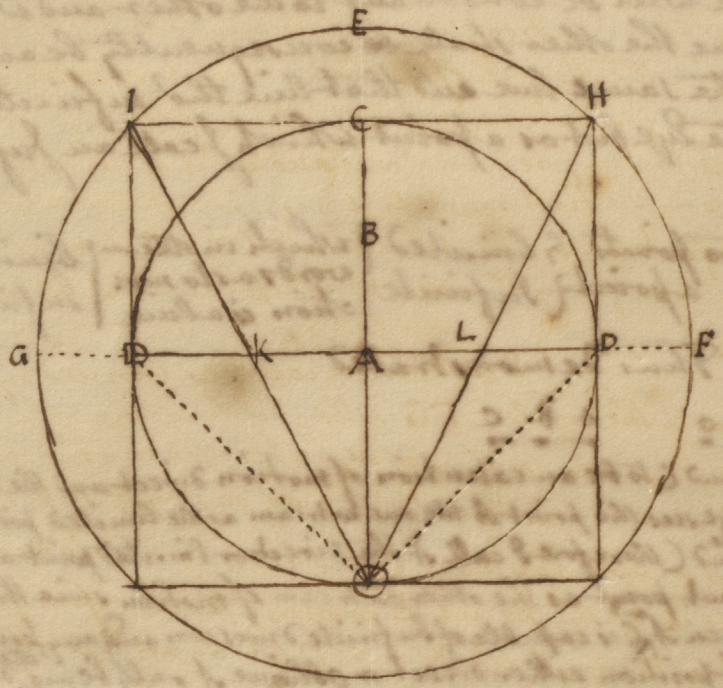
O A B C

Suppose A and C to be an extention of motion direct and the eye att the point O the eye sees the point A the one extream as the limited point which includes (except B and C) therefore I call A the direct or limited point and C the Infi-nite or distant point as the other extream of motion since the Intervening space between A and C is capable of Infinite division and any point there I call the point of position either direct or Oblique A only being the direct and the other points incline more and more oblique till it comes to C the utmost Oblique and most often called the distant point

NB The distance between O and A is supposed pure space and equal to the line A—C which is the vestigii of motion

It being necessary to have proper distance between the Eye and the Object viewed that the Eye may be capable of vision and the Eye being as a point Physical capable of seeing orbicularly by rays as from a Center (I say as rays from a Center of which more hereafter) it is necessary that the Aria be as broad as it is long and the Eye in the midst my meaning is thus

The Eye


E
I
C
H
B
G
D
K
A
L
D
F



The Eye O sees a c the Perpendicular att the Point A just halfway to C and a is to be the nearest aproximation of the object or plane a c and the Eye is to be in the middle and the plane as broad as long orbicularly then a becomes o or the Eye O transfers itself to the Midle of the plane DD a D on either side being as broad as a C is long and a line from a to D on either side will give the Angle of 90 the Quadrant of a Circle being the just distance for the greatest extention of the visuall rays to my mind, (take this my reason for it and tho' it be new and the meanes of my Person the first seen in't despise not the dress tho' not yet become a fashion since it will hold till a better is brought up and even then from this as a principle it must be taken) which is this

As to motion DD is the medial line limited by the Included square and the Circle E F G is the limiting line which having no beginning nor no ending may be termed most properly and infinite line wherein motion may easily be supposed to move in a continual round without ceasing now to account for the vestigia of the point E mooving the Periphery of the Circle E F G seen through the Plane D A D by an Eye att the distance of O Therefrom I say that O sees E att the Point A on the medium by a perpendicular to the Plane DD and if E moves to the point H then H becomes L and is most oblique on that side as a parallel plane will admit being equal in length to another as I H is to D D and seen but half as big att K L and if E moves on the other side to I it has the same effect of obliquity as E H and K L is the representative of the whole line I H but proves but half as big D D being a medium between O C hitherto we have been shewing the effects of an object through a medium to an Eye fixed which will be the same as to the length of the apparent line but there will be this difference worth taking notice of to the Eye moving on a plane equal to the object and the medium and all three parallell supose as

If a single thing be prepounded as if a square be propounded to be made equale to a determined Circle this Square must be resolved into (Q) plain terminated with a certain number of equal and strait lines and right Angles) universalls agreable to all matter, namely lines plaine (which contains Superficies) terminated, Angle, straightnes, Rectitude and Equality, and tho' but one Superfitie yet divided into four Angles by four straight lines of an Equality

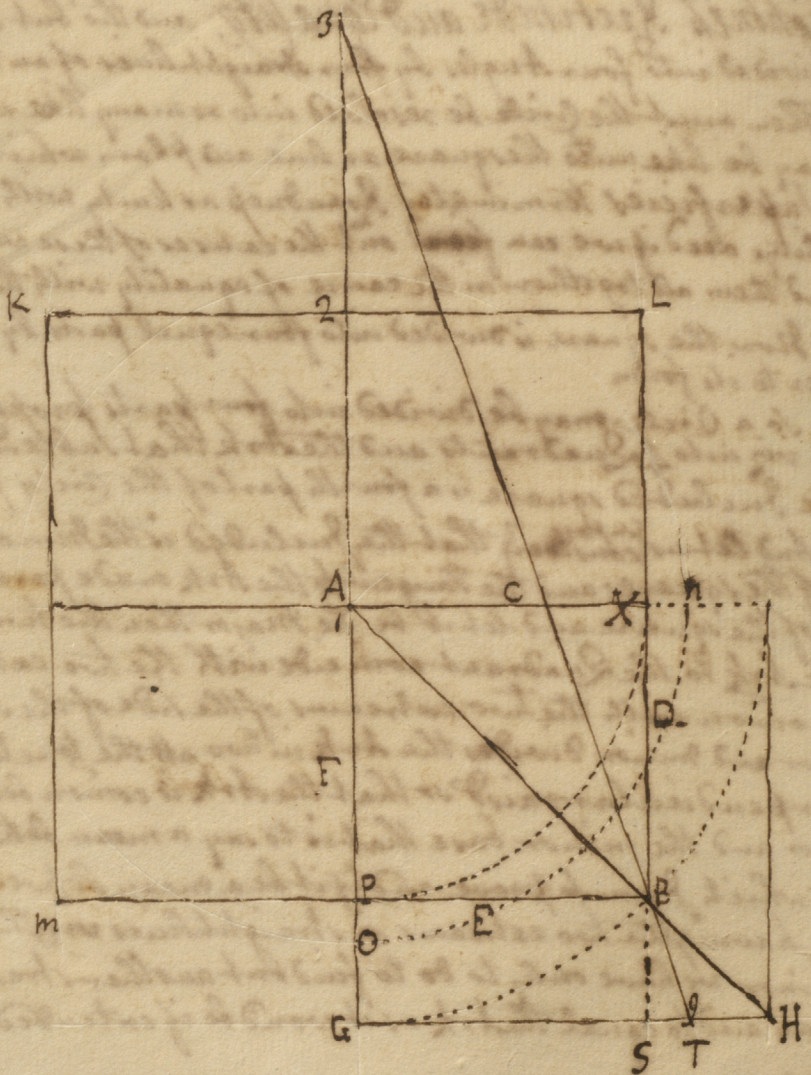
Then must the Circle be resolved into as many like universalls as may be like unto the square as line and plain which contains one Superficies terminated Roundness as Unity with Infinite equalitys deed if we can found out the causes of these we may compound them all together in the cause of equality with the square

Now the square is divided into four equal parts by straight lines proper to its form

So a Circle may be divided into four parts proper also to its form viz into 4 Quadrants and the Ark that subtends the side of the Included square is a fourth part of the Circles perifery

And let us (suppose) consider that the Included is the Minor viz the side of the square; and the Tangent to the Ark made parallel to the side of the square and let it be the Major then the two extreams of the Ark to the Quadrant coincide with the two extreams or are comon with the two extreams of the side of the square and major and minor divides the Ark in two att the touch point by a perpendicular raised so that the Ark is comon between the major and the minor base that is to say a mean between them both which I am to prove and if it be a mean between both we having the two extreams in straight lines viz the Major and the minor we have only to do to find but another strait line as a mean and to equal the Ark as it would be if extended which I do thus

Supose the square AB, and the sides CDEF the four lines straight, Right Angles, as the universalls to all matter viz in line and plain



viz: 49. 45. 50. 53. 73. 103. 108. 128. 152
and 100 2 the other way

plain take E B for the Base minor as the side of the square equal to the Circle O D and add its length three times up the Perpendicular 1 2 3 and from 3 lay a Ruler to B and extend it to J, on the lower Base and that shall determine the line J G for the Radius of a Circle equal to the square K B or what is all one, it shall be the Radius to the Quadrant O E N which Quadrant shall be equal to the fourth part of the square K B viz A N B P which I am to demonstrate Geometrically thus

(Cor) The square K B is the proposed square to which we are to find a Circle coequal of which the square A B is the fourth part and A P X is the Quadrant to the square A B and consequently the Inclosed and lesser or Inner Circle to the square K B to which A G B is the major Circle circumscribing the square K B now to find a mean Circle between the minor and major Circle will inevitably be a Circle coequal to the square A B this Demonstrated the Included Circle A P X is less then the major which includes the minor which is the Circle A P X and the Circle A G B is to evidently Bigger then the Included square K B by the same reason then a due Circle ~~Between Circle~~ between the major and the minor must be equal to the proposed square which consequently follows thus viz P B is the side of the square sought and Tangent to the {minor lesser} Circle A P X and G H the tangent to the major Circle A G B then consequently if the straight line P B or A P is the minor Radius G H also must be the major Radius and consequently a Radius found in a mean proportion between the major and minor Radius viz the Radius P B the minor Radius and G H the major Radius, I say such a Radius found shall be a mean Radius between the two extreams P B and G H. A H is a Comon diagonal to the square A B and A H therefore G H is the side of the major square to which produce a perpendicular from B to S then S H will be the difference between the minor and the major and somewhere between S H there may be found a point as T which being added to G S will give a mean proportion for a Radius to a Circle O. B which is the square K B

That number is not more evident and exact than in extention tho' thought more general in their use and more determinate in their application because the Ideas of numbers are more precise, and distinguishable than in Extention where every Equality and excess are not easy to be observed or measurd, because our thoughts cannot in space arrive at any determind smallnes beyond which it cannot go as in an unite and therefore the quantity or proportion of any the least excess cannot be discovered, which is clear otherwise in number, where, as has been said, 91 is as distinguish-able from 90, as from 6000, though 91 be the next Immediate excess to 90. But it is not so in extention, where whatsoever is more than just a foot or an Inch, is not distinguishable from the standard of a foot or an Inch, and in lines which appear of an equal length, one may be longer than the other by Innumerable Parts: Nor can any one assign an Angle which shall be the next biggest to a right one

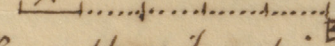
Locks Humane Understanding page 99 of Number

To me it appears there is attributed to number the distinct-nes and clearnes which properly belongs to extention a proove as a part of the whole be it what it will whereas 'tis said that 91 is as distinguishable from 90 as from 6000 or we will put it in other words thus 1 is as Distinguishable from 2 as from 1000 now One - call it what you will, one foot, or Inch, 'tis but a name or a random length taken up ad libitum that will measure extention justly limited to that as well as number for what is more than just that measure repeated does no more belong to the just limited extention than a fraction does to an Integer or unite number just so often repeated to make up the number limited

It is in the behalf of number alledged that one cannot assign an Angle which shall be the next biggest to a right One Now to be tied down to an number Impossibility of error for the right Angle being 90 91 is the next step in unites inevitably but what is an unite more than a name and first given to denention being a taken up length to measure the determined extention by and if there be no remainder the taken up measure declares the extention as Justly as number therefore why all this applause

which

which really belongs a priori to Extention for number is no more than marks to declare the station or position in progression you point upon be it what it will in the said extention as thus Supose A to be the taken up length to measure A B by tis plain A is as unite and measures it 5 times without a remainder that is



five unites it contains then suppose it contained it 90 times then 91 length is the next bigger Angle to a right Angle in number so it is in extention then all the difference is that extention lead us to number but number was the result of extention but numbers is proper Hands to play by the Hand maid to Geometry and are deaterous tools in some mens Hands to play the Legerdemain will fitt to Lead men into Labyrinths blind fold where they are necessitated to stay wanting practice or depth of thought or active to bring them out again where with an implicit faith adore the Light their Leaders have lead them into even in the midst of utter darkness from whence errors unsupportable are broacht by not seeing their way through so obscure a passage the mist arising from a false setting out at first which remains minute at the end of the process proves excessive out of the way

That the Sun is not in the Center of the Universe I mean as the Centrall Body to the Circumscribing bodies which by Spheres moving round it but I in part agree with Aristotle that the Earth is the Center of the Orbs of Sun Moon and all other Stars; to which supposition Ptolomy framed his Hypothesis, and Theory of the Planetary motions: but I disagree with him in some particulars (1st) for I think the Heavens to be fluid and not solid orbs, and (2dly) that the Earth is not immoveable in one respect for that it turns round its own Axis but resteth thereon as being fixed so as not locally to move from it as also that its Centrall point is fixed and never locally moves to any other point but keeps its Center eternally as it was first posed at the Creation 3dly that the fixd starrs are the ultimate remotest distance of the universal motion Therefore fixt ~~are situated by God~~ (4) That the Sun is the Primary Planet and constituted by God the Primum mobile in Secondary causes of which itself is Principle and chief Agent (5) that the Planets are locally moved in perfect Circles tho' in Appearance Elliptical in their Orbits, by

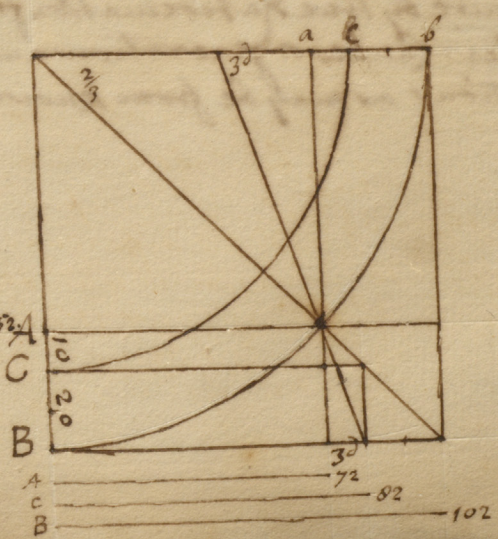
Influence of the Sun proportionall to their Distance

1 The Introduction 2 The Definition 3 of Philosophy explained
4 Ratiocination what, 5 Properties & what they are how known
by Generation and contrarily, 6 the Scope of Philosophy,
7 The Utility of it 8 the Subject 9 the parts 10 the Epilogue

He who from Opinions or Authority of others though
not vulgar yet full of uncertainty as carelesly taken
upon trust or Imperfect knowledge without Geometrical
Demonstration has a chance as well to be wrong as right
and if ratiocination or computation as an Author has it
is to collect the sum of many things that are added together
or to know what remains when one thing is taken out of
another. Ratiocination therefore is the same with addi-
tion and substraction or Multiplication and division are
only as it were an addition or substraction of equals one
from or to another as often as possible: This has lead men
into that high esteem of Arithmetick as to neglect in some
measure Geometry and to (for the expeditious property of
number) prefer the Handmaid before the Mistress for
a long series of years past which I verily believe has
hindered the improvement of appearances of Magnitudes
and distances to what it might have been such magni-
tude or space is a real thing but numbers not and capable
of Infinite division and commensurable * * * * * *
one length with another whatsoever by one common mea-
sure capable to be found out that shall just meet both
lines without a remainder which (Arithmetick / Numbers
World's infallible guide) has not been able to accomplish tho'
Geometry with a small apistance or none of Numbers can
very easily perform for a few Geometrical lines is as I say
capable to give a square equal to a Circle or divide either
the

the Circle or the Square into aliquant parts taken up ad libitum equal
the one to the other without any hesitation or loss of time or remainder
Whilst Arithmetick is necessitated to use Infinite numbers by works
of supererogation in figures and time and when ended to the nicest
they can' be only fitted by a remainder more or less: witness Ludovi:
:cus van Cullen his exhibition which had no man discovered the
Error in that prodigious long work of his, it had paped demon:
stratively for Truth What tho' any Man should, either by numbers
or Mechanically, or only by chance, exactly set out the
the Circumference of a Circle yet what would it avail or contribute
toward the section of an Angle which must be conjunctly analo:
gous to each other according to any proportion assigned that is
to find out a strait line equal to the Arch of a Circle recipro:
cal to each other since the benefit of the knowledge of the length
of an Arch of a Quadrant consists in this, that we may thereby
divide an Angle according to any proportion which 'tis plain
cannot be done by Arithmetick but may be done by Geome:
try that is by proving that straight lines and Circular lines are analo:
gous to each other which Euclid held to be Incommensurable
to each other, but now found to the contrary which I am
to Demonstrate

2 Philosophy is such knowledge of Effects or Appearance
as we acquire by true Ratiocination from the Knowledge we have
first of their Causes or generation: and again, of such causes or
Generations as may be from knowing first their Effects



see 43.45.50.53.60.103.108.128.152.
and see 2 the other way

(17) It would be worth knowing who first brought faith (73
to be the Standard in the Mathematicks He made a short cut
to please Mankind they are happy who set down and believe
their forefathers at so easy a rate but alas we poor Painters
are obliged to fatigue ourselves in knowing the utmost law
of mensuration even to a scrutiny of perfect truth being the
Object seen and the Person seeing are with in humain reach and
may easily be detected by them that search in our way or seek
the laws of truth our humble wing hovers about the earth
which when ~~once~~ drowned necessity (the Mother of Invention)
forced mankind to think on some way to redress a comon
calamity in Justice to ourselves and to our Neighbours in
(d) rendering to every Neighbour the drowned Land which before
belonged to him But as to matters beyond our reach and
what belongs in comon to us all each man acquiesces in
a comon and expeditious good and yields to faith which
some eminent Person set on foot whose authority was
too great to question thus Arithmetick the Handmaid
got the upper Hand of Geometry without which it had not
known a Being and without whom whatever walk it
takes in an unknown path it may mistake its way

---

(18) Reduce the Fraction all into one Denomination by
multiplying them by three and the first intire integers will
be 24 — 10 — 34 } which multiplied by three gives 102 then
3 3 3 } add the difference ten to 92 and it gives the
72 30 102 } unknown number but 82 add ten to 102
10 10 10 } it will give 112 from which subtract 30
82 112 30 } and the remainder will be also the unknown
30 82 } number 82
112

10
3
30
72 102
10 20
82 82

x as thus take the same Iron hang it pendantly in one string or scale
and the stone pendantly in another string or scale laterally tho' att
the same heigth each from the Earth if double distance from each
other and you will I believe find the Iron if you cut the string fall
perpendicularly to the Earth if not perpendicularly to the Earth
yet it shall quit the stones vigorous attraction and descend
by its own gravity to its center and leave the stone hanging
in the air then say is matter without gravity or is gravity
inhaerent in attraction as Kepler and Gilbert affirm Demonstration
would prove him in the wrong x

this scratched but in the original

If When a Man holds a peice of Iron of 6 ounces weight in his Hand with a vigorous loadstone placed at a convenient distance, underneath his Hand, and finds the weight of the Iron to be Increased from 6 Ounces to 6 pounds If Kelper and Gilbert on one side should tell him, that that great weight is a quality meerly adventitious, or Impressed upon it by the attractive influence of the loadstone subjacent; And Aristotle on the other affirm to him, that that weight is a quality essen: tially inherent in the Iron his easie to determine to which of these so contrary Judgments he would incline his assent if he does but change the position of the Iron and stone into different situations ~~as thus take the same~~ as thus take the same or

Or try it thus take a peice of Iron of 6 Ounces weight put it in a scale and in the other scale a six ounce weight of lead the scales must then be equal then put a loadstone 6 Inches under the scale which hath the Iron and let us suppose the loadstone to pull the scale of Iron down towards itself to ballance which add more weight to the leaden scale which let us suppose to be six Ounces — more to make it equal ballance then remove the stone so as to hang over the Iron just 6 Inches above then you will be convinced whither matter hath gravity in it or not and what is the Essential difference between gravity and attraction and that they are not both one and the same quality but different in effect for gravity will prove the pushing agent like the Bowstring let flie (when drawn up) which sends the arrow forward from the string and e contra attraction is like the Bow: string whilst it is Drawing up by the Hand it still pulls

the arrow

the arrow gradually along with it which way soever the Hand turns in a reverse manner to the flight of the Arrow which proves the operation to be caused by contradistinguished Agents q e d

But to lay aside Attraction and come to our last and Incomparative Argument; since the velocity of the motion of a stone falling downward, is gradually augmented, as it by the accession of new degree of Gravity, grows greater and greater in each degree of its descent and that augmentation, or accession of seeming Gravity, & so of velocity, seems not so reasonably adscriptive to any other cause, as to this, that it is the pure gravity inherent in the stone as matter, encreasing in each degree of the stones approinquation of the Earth, by reason of the stones first commencement of descending as it rests from rest its first degree in v: g: effort must be slowest, the next degree is quicker as if receiving an augmented impetus from the motion of the first thus its celerity is improved in each degree continually augmented by the Impetus of each foregoing impulse which accumulates its celerity in its approach towards the seat of rest

What can be more rational than the first degree of Gravity belonging to a stone not yet moved should arise to it from its own weight of matter and as the first degree of motion by descent it must attain the least velocity i:e: a velocity proportional to its own gravity so the second is added a new degree of velocity being augmented by the accession of a second augmented Impetus which, grows greater and greater in each degree of its accent; and that Augmentation, or accession of velocity, seems not so reasonably adscriptive to any other cause, as to this, that it is the stone's pure density of matter gives the first and slowest degree of descent a quality inherent in body: and no quality can be better

be better intended or augmented, than by an accession of more 76
degrees of force accumulated by each degree of Impetus or pulse
augmented by the foregoing quality

---

(20)

Tonick Motion? call so by Physicians

like such things which seem to quiesce and yet make some resistance by Tonick a kind of motion, like that of the Eye of an Animal when by the Contraction of all its muscles at once it is held in one fixed Position

Thus not only the whole Globe of the Earth but all its parts are held unmoved, and first by mutual coherence, and resists motions as they are parts of the whole

---

The Creation consisted of mind matter and form now after the Creation of the universe there ensued motion time and Space as secondaries and relatives to the celestial powers and governed by their Influences by which power generation proceeded

motion = } to spirit or mind
time = } to matter
Space = } to form

that is motion is the moved ~~form~~ object
Time is its relative as ~~wide~~ Space both its contraries, therefore the form of a strait line

These three reduced into Lines resembling their primitive powers they will stand thus

motion eternall its Symbol is a ⊙ which has neither beginning nor ending

p: 103 Chap: 12th Definition of Quantity

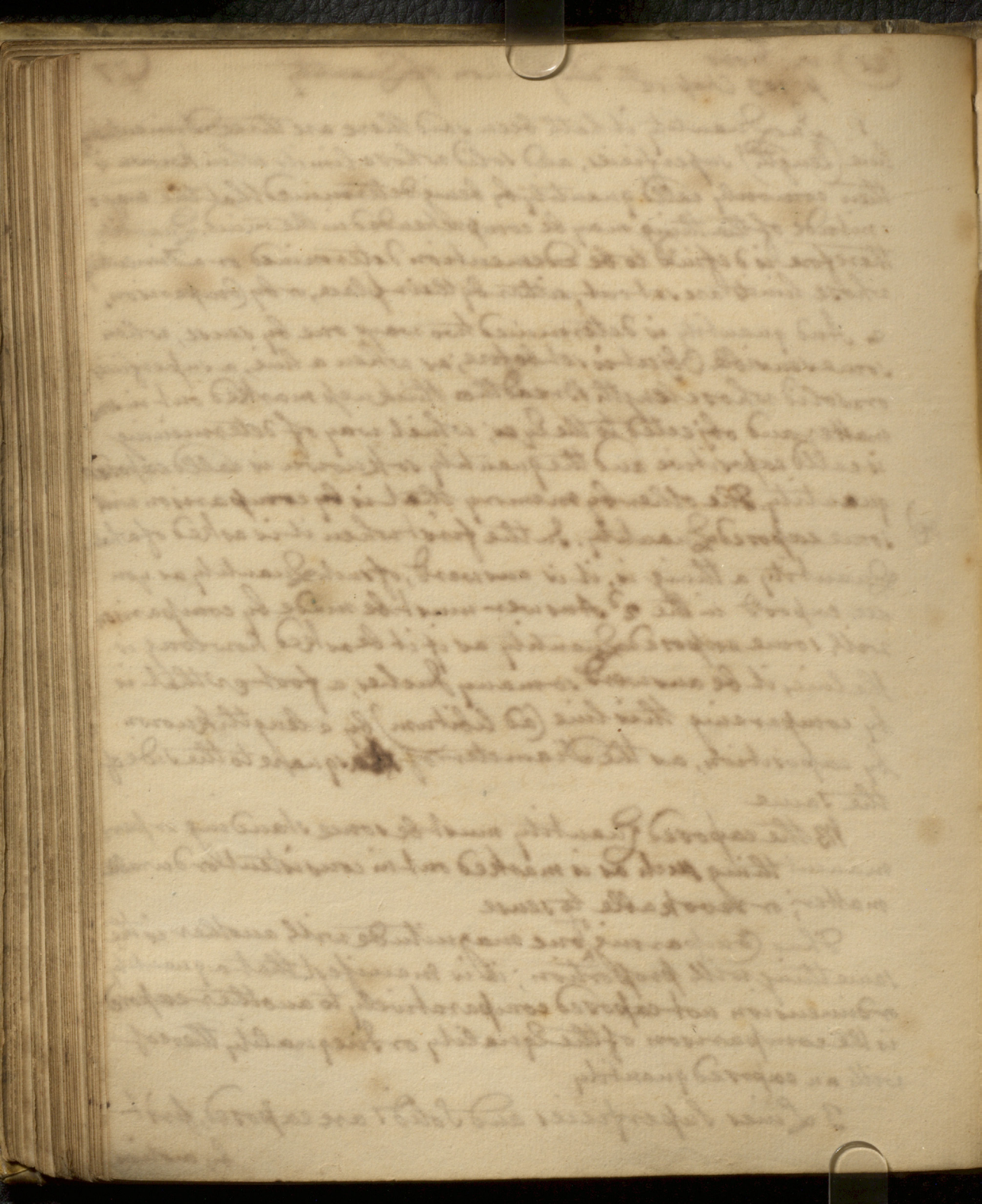
1 In Quantity it hath been said there are three Dimentions line (length) superficies, and solid whose limits when known is then comonly called quantity by being determined that the may: nitude of the thing may be comprehended in the mind. Quantity therefore is defined to be a dementon determined or a Dimention whose limits are set out, either by their place, or by Comparison,

2 And quantity is determined two ways one by sense, when some sensible Object is set before, as when a line, a superficies or a solid whose length Breadth or thickness marked out in some matter and objected to the Eye; which way of determining is called expositive and the quantity so known is call'd exposed quantity. The other by memory that is by comparison with some exposed Quantity. In the first when it is asked of what Quantity a thing is, it is answerd, of such Quantity as you see exposd in the 2d Answer must be made by comparison with some exposed Quantity as if it be asked how long is the line, it be answerd so many Inches, a foot or that is by comparing this line (ad libitum) by a length known by exposition, as the Diameter of a square to the side of the same

3 The exposed Quantity must be some standing or permanent thing such as is marked out in consistent or durable matter; or revokable to sense

Thus Comparing one magnitude with another is the same thing with proportion; it is manifest that a quantity or dimension not exposed comparatively to another exposed is the comparison of the Equality or Inequality thereof with an exposed quantity

3 Lines Superficies and Solids are exposed, first by motion



by Motion in such manner that the marks of such motion be per:
:manent as when they are designed upon some matter, as a line
upon Paper, or graven in some durable matter. Secondly by Apotome
is when one line or length is applied to another line or length one Breadth
to another Breadth one thickness to another thickness; which is as
much as to describe a major line by a minor line (not to describe a
line by a point or as most do a nonentity) a superficies by lines, and
a solid by superficies (it is there only meant that lines
which in themselves are supposed to have
nothing but length and superficies which in themselves have
nothing but length and Breadth may be exposed by FLOWING namely
a line may be made by cutting an exposed superficies and a
superficies by cutting of exposed solid

4 Time is exposed not only by the exposition of a line but
also of some moveable thing which is moved uniformly upon
that line, or at least is supposed to be so moved for tho' Circles in
dials are lines, yet the Conception of uniform motion upon that
line must expose time by motion of the shadow or hand or else
'tis not sufficient to say that line is time

5 Number is exposed by one part of a line as it may be more or
less divided which is called by the names of number One two
three &c and not by points is plain for if by points they must
not be contiguous that they may be distinguished by notes and so plain
:ed that they may be discerned one from the other and there
fore must contain some length Thus number is called discreet
Quantity whereas all Quantity which is designed by motion
is called continual Quantity

6 For the exposition of velocity (which is motion by the
Definition which in a certain time passeth over a certain
space) it is requisite not only that time be exposed, but that
there be also exposed that space which is transmitted by the Body
~~whose velocity~~ whose velocity we would determine, and that a
Body be understood to be moved in that space also; so that there
must be exposed two lines, upon one of which uniform Motion
must

must be understood to be made, that the time may be determined and upon the other, the velocity is to be computed. As if we would expose the velocity of the Body A we draw two lines A B and C D. A ——— B / C ——— D a Body in C also which done, we say, the velocity of the Body A is so great, that it passeth over the line A B in the same time in which the Body C passeth over the line C D with uniform motion

7 Weight is exposed by any heavy Body of what matter soever, so it be always alike Heavy

8 The Proportion of two magnitudes is then exposed when the magnitudes themselves are exposed; namely the Proportion of Equality, when the magnitudes or lines are equal; and of Inequality, when they are unequal for when two unequal Magnitudes or lines are exposed their difference is also exposed since the proportion of two unequal magnitudes or lines consists in their difference compared with either of them; it follows, that when Magnitudes or lines which have proportion to one and other are exposed, their proportion also is exposed with them; and in like manner the proportion of equals (which consists in this, that there is no difference of magnitude or part of a line between them) is exposed at the same time when the equal magnitudes or lines themselves are exposed for example if the exposed line A B and C D be equal the proportion of equality A ——— B / C ——— D is exposed in them and if the exposed line E F be unequal the proportion which E F has to E G and E G / E ——— G ——— F that which E G has to E F are also exposed in them for not only the lines themselves, but also their difference G F is exposed. the proportion of unequals is quantity. For the difference G F in which it consists is Quantity. But the proportion of Equality is not Quantity, because between Equals there is no difference; nor is one Equality Greater than another as one Inequality

9 The Proportion of two times or of two ~~different~~ uniform Velocities is then exposed, when two lines are exposed by which two bodies are understood to be moved uniformly and therefore the same two lines serve to exhibit both their own proportion, and that of the times and Velocities, according as they are considered to be exposed for the Magnitudes themselves, or for the times or velocities for-
let the two lines A B be exposed; their proportion therefore
A ——— (by the last foregoing Article) is exposed and if they
B ——— be considered as drawn with equal and uniform velo-
:city, then seeing their times are greater, or equal, or less, ac-
od :cording as the same spaces are transmitted in greater or-
equal or less times, The lines A & B exhibit the Equality or
Inequality That is the proportion of the times. To conclude,
if the same lines A and B be considered as drawn in the same
time; then seeing their velocities are greater, or equal, or
less, according as they pass over in the same time longer, or
equal, or shorter Lines, the same lines A and B will exhibit
the Equality or Inequality that is, the proportion of their
velocities

Analogism on the same proportion

Great and little are not intelligible but by comparison
now that to which they are compared is somewhat ex-
posed, that is, some Magnitude either perceived by sense,
or so defined by words, that it may be comprehended by
the mind. Also that to which any Magnitude is compared
is either Greater or less or equal to it. And therefore proportion
(which as I have shewn, is the estimation, or Comprehension of
Magnitude by comparison) is threefold; namely proportion
of Equality, that is, of Equal to equal; or of recess, which is of
the Greater to the less; or of defect, which is, the proportion of
of the less to the Greater

Again

finite hath beginning and endinge beginning and
ending hath a streit line a strait line is finite,
every line hath a form every form hath a length,
therefore every line hath length. Every form
hath length, every length hath line, therefore every
form hath line.

Again every one of these proportions is twofold; for if it be asked (8)
concerning any magnitude given, how great it is, the answer
may be made by comparing it two ways, first by saying it is greater
or less than another magnitude by so much; as seven is less then ten
by three miles; and this is called Arithmetical proportion. Second
:ly by saying it is greater or less then another magnitude by
such a part or parts thereof as seven is less than ten by three
parts of the same ten. And this proportion be not always explica
=ble by number, yet it is a determinate proportion, and of
a different kind from the former and called Geometrical pro:
=portion, and most commonly proportion simply.

2 A proportion whether it be Arithmetical or Geometrical,
cannot be exposed but in two magnitudes of which the former
is commonly called the Antecedent and the latter the consequent
of the proportion as I have shewn in the 8th Article of the prece
=dent Chapter. And therefore if two proportions be to be com
=pared there must be four magnitudes exposed; namely
two antecedents, and two consequents, for though it happens
sometimes, that the consequent of the former proportion be the
same with the antecedent of the latter, yet in that double compari
=son it must of necessity be twice numbered, so that there will
be always four terms

Every form is finite, every finite is like thereof: every line is form,
every strait line hath beginning, every beginning hath ending, every
ending hath strait line; every strait line hath beginning and ending
every beginning and ending is finite thereof: every finite is a strait line,
(9) Every form hath parts finite, every finite hath length thereof: every
~~every form is finite every finite is length every form is length~~
form hath length, every finite is form, every form is length, there
every length is finite; what hath no beginning ~~hath no ending~~ is
infinite, what is infinite hath no ending, what hath no beginning
hath no ending: a ~~finite~~ Circle hath no beginning, no beginning hath
no ending, a Circle hath no ending; infinite hath no beginning nor ending
a circle hath no beginning nor ending thereof: a Circle is infinite

the first paragraph is put 2d.
in the original with marks of
alteration

A Cause is the aggregate of all such accidents as both in the Agent and Patient, as concurr to the producing of the Effect proposaded; all which existing together, it cannot be understood but that the effect existeth with them; or that it cannot possibly exist if any one of them be absent. And the aggregate of all the accidents together is the Entire Cause

The Cause of the appearance of an object to the Eye is light by rays transmitted from every individuall point throughout the whole surface of the Object visable to the Eye by motion of Rays or supposed streight lines by reflection sent to the surface or Pupil of the Eye so that the action by which Light is generated is motion only in the parts of the Object sent through the Medium which contributes a continuation of that motion to the Eye and the Eye a continuation of the same motion to the retina and so to the sensorium communis of the Brain by which the Intellect has an Idea true of the form sent

From hence 'tis plain there is three things required to have or give a true appearance of the form of things bodies or objects, in generall viz first Original Motion as Agent from the visable Object 2dly the Medium to continue that motion and 3d. the Eye to receive it as Patient As for Example

Montecavallo's Tripos
or Hill's linial Universe

At Delphos there was a stool the Prophetess sat upon with three Legs from whence she used to Prophesy which denoted in their Mythology or they conceived three Powers which universally governed all things various has been the opinions to particularize what they meant by it some one thing some another just as it suited to what they Imagined so shall I make use of it in my thoughts to Illucidate what I am going to explain. Apollo was the Deity of that Dome the Circular Glory about his head denoted his Infinite wisdom ever darting forth his harp denoted his entire harmony Pithon was a monstrous Dragon representing Error which he killd with his arrows and they represented the rays of light issuing from him continually and the Tripos was the seat from whence all his Prophecies, doctrines and laws were received by the then devotees to his shrine Thither came Philosophers Poets Geometricians Mathematicians and Musicians The Philosopher adord the Wisdom in general The Poet adord the Muses in the Number nine between which there is but eight Intersections the Mathematicians the odd Numbers three seven nine or Number in General it being winged at head and Heel capable soon to fly out of sight and too often beyond reason The Geometricians adord him in lines & wisely and Industriously endeavourd to mimick his motions by rule and compass to Justice and truth and trace Sol's motions when in the Heavens viz Orbicular or Circular when on the Earth he is called Apollos direct, or straight in the flight of his arrows, the Musicians in the strings of his Harp which are straight tho' different as to length by them the Harmony of the whole operation too often now adays Judgd only by the Ear

As a Painter it naturally falls in by Education as well

as natural inclination to join with the Geometricians in opinion
that if the ancients did not by some glimmering light of more divine know-
=ledge in some of their Philosophers intend an adoration to some unknown
being which by the Ignorance of the times they dare not or the Darkness
of the times they could not comprehend how to reveal) that lines
and mensuration was only meant by all their dark Enigmas
by which all forms or appearances of motion may be demonstrated
from thence some have thought of Finical Deities and wholly vain
and vile belief have put second Agents in the place of the Efficient
cause when no more was meant thereby as I can conceive but
only this that there was some motions set in number, form and
mode to the universe given as a Law to govern in a certain
mode of motion by a few simple formes from which it devials
not but goes on eternally the same and must do till the Great
Creator bids it cease which is the same as to annihilate that
which was by him created

It is first to be observed that the Heavenly Bodies
such as the Planets roul round in Circular Orbits, tho' in the
Ecliptick yet different as to time and space and the Earth
round its axis parallel to the Equinoctial The fixt stars
ever the same established tho' they may to us seem altogether
to roul round by the rotation of our Earth upon its axis
but that only is seemingly so

It also is to be observed and let it be granted that sight
of Objects is transmitted by rays of light in straight lines from
the Object to the Pupil of the Eye and from thence returned by
the same law of motion in streit lines unto the retina of
the Eye and the Cinereous sensory of the Brain by which the mind
takes cognizance of the shape or formes of Bodies or things
or their Appearances and from whence may be gathered or
collected even some spiritual or Intellectual things as the form
of the vestigij of an Object in motion gone collected by several

distant

3 Jan
periods from the Objects taken at collated times proper to the Inquiry either in altitude, Longitude or Latitude and a form made of the temporanious points or periods in the appearance of the whole visible motion which viz: I think may be done so as to allow for unaccessable distances and proportional to motion time and space and to be Geometrically demonstrated

In order to which I am first to sett down how I define motion time and space and what are my Lines surfaces forms materials which I use for my demonstrations such as Lines surfaces formes ex the Circle, strait line, sphere, Cube and Cone or

Definitions

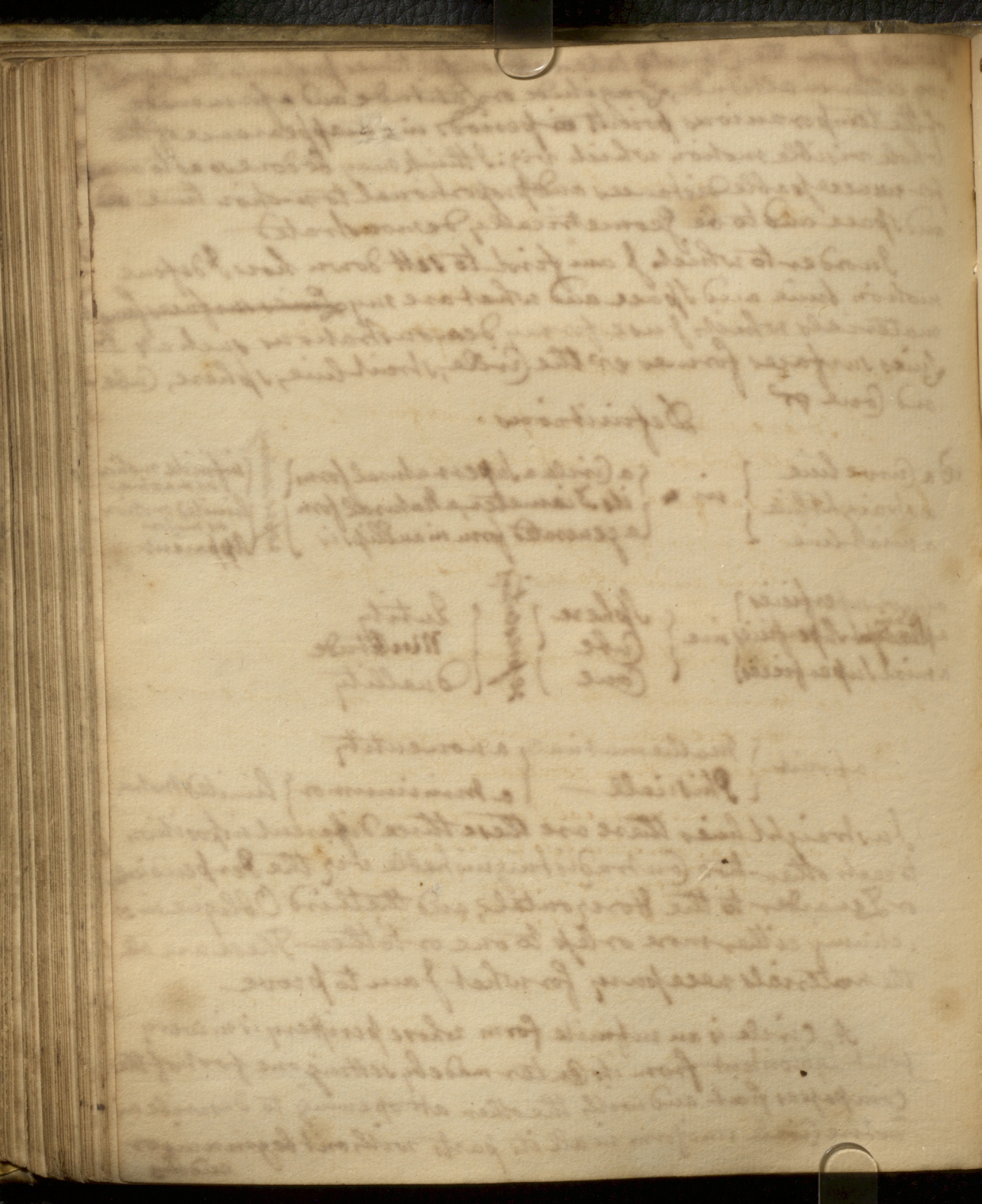
a Curve line
a straight line
a mixt line
} in ∝ { a Circle a Supernatural form
its Diameter, a Natural form
a generated form in an Ellipsis } representing { infinite motion as maxima
limited motion as major
Apparent

a Curve superficies
a Plain superficies
a mixt superficies
} in { Sphere
Cube
Cone
} representing { Entity
Multitude
Duality

a point { Mathematicall — a nonentity
Phisicall — a minimum or { limited motion

In straight lines there are these three different disposition to each other two Contradistinguishable viz the Perpendicular or Leuader to the Horizontal, and the third Oblique inclining either more or less to one or t'other These are all the materials necessary for what I am to prove

A Circle is an infinite form whose periffery is in every point Equidistant from its Center made by setting one foot of the compasses fast and with the other att opening to describe an intire Circle uniform in all its parts without beginning or ending



ending therefore may be called Infinite in respect of direction from its Center & motion on its Periffery

A strait line is a form finite equally poised between its points hath a beginning and ending is ever generating or perishing in vicissitude of change in respect of motion thereon in going forward or returning backward if thereon you will keep a coresponding time with the Infinite motion on the Periffery of a Circle

A mixt line hath an uncertain form generated betwixt the Curve and strait by the mixt influence of motion inclining more or less either to one or th' other

A Sphere is an intire simple uniform Body the most containing of all Bodies and represents unity in finity of form having one surface

A Cube is a Body compounded and represents multitude of Parallel lines and Surfaces in the same finite forms containing 6 surfaces 12 straite lines & points

A Cone is a mixt Body compounded between the Curve and strait containing two different surfaces one line curved no strait line one plane Circular-surface and one equally intire oblique Surface therefrom conically terminateing in one point

A point Mathematical I cannot think as the ancients have done who made it a something to generate a line and yet called it a nothing in their Definition since nothing Multiplied or added it is the same thing nothing is still produced nor nothing generated

The like may be said of lines generating surfaces or surfaces generating Bodies since by adding or multiplying them the same nothing is produced

Therefore v.g: I assume an Imaginary something as a supposed

supposed length in extention only I call a strait line a simple finite form
be it more or less taken up at pleasure because it may be capable to declare
the length bread th or depth of body, or motion as suppose an Inch foot or by
adding or Multiplying its own length it will produce a certain augmen
:tation which is intelligible and may be made adequate to any extention
And can at present recollect in nature by motion but one only way con:
ceivable how a strait line may be really and truly generated
and that is by the Earths motion round upon its axis by gravity
stated in the midst of a fluid Atmosphere from whence I took my-
thought and then will follow that this Imaginary strait line
is the Minimum where motion ceaseth and may be called the
bed or seat of rest if so then the outward mooving force in the
Heighest sphere of Principle motion viz the Sun in the Ecliptick-
rolling round in a fluid adequate to its own gravity may properly
be called the primum Mobile or only chief principle moving
power or maximum in respect of Motion

Thus having the Maximum and Minimum given their
Diameters are also known we only want to find a mean
which shall incorperate the mooving extreames so as to-
blend them analagous or reciprocally together which I am
to show

The Diameter of a Circle is a known length as bounded
by the Circle and all Circles big and little being Concentrical
any Angle from the Center will divide all equally alike in
proportionall parts in numerate them Eternally or extend
them to Infinity for Instance an Angle of ninety one and
one third from the Center of a little Circle let never never so
many larger Circles be added to the same Center augmenting
their Radius to Infinity yet all their Periffery's shall be
equally divided by extending the same Angle of ninety one and
one third from the leaser Circle throughout them all and so

for

for any other Angle or Division of the Periferys ad libitum from one Common Center since supose a Circle 3 times as big a Radius therefrom is as (88)

Radius is to the Periffery of the Leser Circle
so is the Radius to the Periffery of the greater } viz { 102 : 328 ::
306 : 984

or in other termes as

as Diameter is to the Periffery of the leser
so is the Diameter to the Periffery of the Greater } viz { 204 : 328 ::
612 : 984

---

(24)

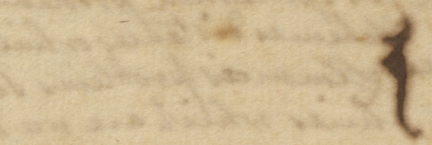
Explicatory } There are two sorts of Truth that which is already known and that which is yet unknown to us and after which we are searching This difference constitutes two Principal figures viz Spherical or Cubical the Circle and the Trait the one Simple the other compounded

Instructive } as Spharical problems or Lemma's problems
Inquisitive } Lemma's problems Schemes distances or lines which are known truths
Lemma's problems Schemes distances or lines which are unknown truths

Explicatory } or { Instructive lines / Inquisitive lines } formes or bodies } { those which produceth truth as yet unknown

each of these two kinds are divided into divers Species according to the motion in the mode of the formes they are to produce or the manner how produced

this copied from the same paper with pa: 161



And since the Sun we are sensible it moves circularly in an Orbit as in the Ecliptick by its whole motion revolving in itself 'till it returns to where it set out at first thus it circumscribs included Space in the Center of which is the Earth stated as the meanest extream from Motion in the seat of rest where matter if left to itself would by Gravity naturally congregate and since the Body of the Sun seems to us to be of the nature of heat as fire or flame seemingly endued with two different qualitys by its Missive rays not only with force penetrating subtilizing firmenting heating rousing and tareing in peices heavy sluggish matter causing it to expand more and more in becoming a fluid which it raises to its self by graduall levitating and subtilizing still each fluid particle as it rises 'till it reacheth its utmost degree of fluidity with itself tis by our supposition that the Sun acts like our terestial fire which we Imagine too comonly to attract matter towards its self which may possibly be nothing more than the former property of the Suns Missive rays as penetrating heat which subtilizing the outward cooler air generates the infinite degrees of gravitating matter and thus may seem to have a contrary property by some call'd attraction by particles still mounting upwards as to the Sun by reason matter heated expands and fills a greater space so consequently Elevates or Evaporates every way in orbem each particle to its proper seat in Æquilibrio with its own gravity for I cannot otherwise comprehend as some do that the Sun should attract and forcibly penetrate Bodies by the same Rays mispevely sent which seems to me to be two opposite contradistinguished actions in one and the same line or

Ray

Ray Therefore I choose to beleive inactive matter to be endued 90
only with inherent gravity tending to its absolute proper seat of
rest the lowest extream and minutest extent of accelerated motion
i: e: the Center of the Earth. And the other extream, as the supe
: riour influence to reach to the fixed stars where also its
misive powers likewise ceaseth in the superiour extream
as the largest extent whereof Universal slowest or decrea
: sing Motion ceaseth since the two extreams are equally the
same with att Rest by cessation of slow or decreasing motion
gradually they terminate in Rest att the utmost extream of
universal motion where the fixed stars unalterably keep
their constant seat and the other extream the Earths seat
where its axis rests

90 Thus we find that Motion takes up or Comprehends
Space as one whole something let the forme be what it will
like to Body, and is capable to be measured and to be divi
: ded equally alike, supposing there were a means found out
how to divide the Circle or the Sphere so as to be comensurable
with the strate line or Cube and find a Comon measure or
number which shall equally divide the side of the square
and its Diagonal without a remainder and give by the
same measure a line equal to the Circle tho' the distance
be ever so great, if the Object be but in sight which I shall
here demonstrate

Motion as a whole something according to what
has been said above has degrees of more or less answera
: ble to the superiour and inferiour degrees of velocity
yet every part of it is motion, The Sun as Principle of all the
Motion has its Major and its Minor celerity and since he
is Principle Agent of motion must be so fitly placed as to

distribute

distribute his Influencing power proportional to the Circuit that the 91
major and minor moves in the Major space (the moving power takes up)
must contain the minor, therefore the Ecliptick as Minor must be the
Inward Circle Since Motion time and Space are in themselves ever
equal for time and Space are only Phantasms meer accidents —
attending on motion as stops or notes to divide circular Motion
by for how should we distinguish the present now from the future
then unless we find out some distinguishable mark or visable
note to divide continued or Infinite Motion in a Circle In-
:finity surpasseth humane Intellect our Minds as finite
can only compare or try to measure Infinite by a finite
something contradistinguished to infinite to make it
Intelligible to ourselves as well as others

This leads me to think that no Intelligible mark or
note can be more opposite or contradistinguishable to
a Circle than a streight line but a strait line is uni-
:versally held to be incomensurable (Heterogenial) to the Circle nay farther
the four sides of a square and its Diagonal call which
this Circumscribed in one and the same Circle yet all Men
call them Desperata's surds, incomensurable by any
certain comon measure or number without leaving a
remainder vide Dr Cheine's naturall religion on Infinity
p: 15 of surd quantityes where he continually carrying
the surd quantity along in his division of the side of the
Square and from thence erroniously argues

Spiritual or divine motion I call
Infinite motion or motion continued with Infinite duration
of that motion in perfect uniformity of manner always one
and the same, and in nature unchangeable which manner
of motion may properly be represented by the form of a Circle

By spiritual celestial or divine motion, I would be here under-
=stood to mean Spharicall or Circular motion which is conspicuously
exhibited by the motions of the Heavens as sun moon and Planets &c.
every one of which are thought may must have some natu-
=rall Influence by their continued uniform motion, by their light,
and heat &c. given them by a first cause i:e: God

Corporeal or material motion, I would be here understood to mean
motion in a strait line forced by some outward Power as by gravity
a Body falling, attracted, impulsed, which continues no longer
than whilst falling, attracted or Impulsed a meer accident
not existing in itself but is a relative to the spharical power of
motion Therefore finite, limited, discontinued, chaungeable in
its manner as Incons istant to its own parts, finite therefore,
imperfect, proceeding from a secondary cause as an effect there
from viz the sun as cheif Agent amoag secondary causes and
the strait line the radius to the Circulating power of the suns
motion from one extream to the other in a double ratio

The first motion reason discovers this visible world
is governed by viz spharicall motion by the revolution of
these Bodies the sun Moon and Planets nay the whole uni
=verse revolves spharically each Body in their Orbit as
here I shall discover to be fact the Circular motion is Incom
=prehensible to us because we cannot conceive how it can
change its tendancy of its motion at every point in the
Periphery of the Circle by an Infinite succession thereon with
=out beginning or Ending yet we find it nevertheless to be

fact

fact and we must not deny fact tho' not conceivable how, yet sure I am the difficulty is taken off by saying it is produced by an Infinite Power viz: God and so I take it and consider it only as to its form of manner as it is given and as it is to us where ever visable which I take to be Circular motion of those Bodys proportional to each of their distances from the Earths Center

Now if it can be accounted for that the Sun is the Primum Mobile (will Power implanted in it by the Great Author of this wonderful Machine the universe) or cheif Agent under him by tracing the vestigij of its motion, in periods how it affects other Bodies swimming in a dense fluid within the Sphere of its activity, and causing each Body to move equal space in equal time according to each of their different situation from the center of their vortex and by collecting these vestigij and periods upon a plane, first the Geometrical plan of their situation a priori and then of their different procession thro' such periods and by examining these processes whether they agree with the real appearances as to motion time and place without any deviation in the Scrutiny I think will be sufficient that it may be so

To clear the way 'tis necessary first to obviate that general Mistake hitherto suckt in viz that a streight line is incomensurable with a Circle in all its parts or in other words that the trisecting of any Angle is not yet found which are both one and the same thing for they are analogous to each other and can mutually operate together for the want of which knowledge errors have been propagated to a prodigious Height and Circular Motion necessarily distorted into other forms which nature never knew. to make out several Hypothesis is

(1) Therefore we will suppose that a strait line may be given equal to a Circle since it may be proved

(2) That any Angle or a Circle may be Justly divided not only into aliquot, but also aliquant parts as the Straight may be ad libitum and as quick

and as quick and will the same ease and truth

(3) That the side of the square and the Diagonal may be measured by one common measure or number either mechanically, Geometrically or Algebraically proved

To prove these things their Data's I desire may be allowed

(1) That an Object of Light, or that Light transmitted to the Eye by strait lines

from hence we conclude that these strait lines issuing by rays from every point of the objects visible surface the Aggregate of rays from the whole Object is called the full Pencil of rays all which are momentously dashing upon the Pupill of the Eye thence to the rettina so the brain takes coqnizance of the Objects form by Infinite rays of strait lines sent by a pulse of Light from every point on the object to every corresponding point on the rettina thus let us suppose sight to be formed

(2) for me here to explain that sight may be transmitted through a dense medium instantanious Just as a Blind mans stick is his Eyes who feels with one end of his stick and perceives the distant touch by the other end to be at such a distance from him by the Instantanious communication of contiguity of parts of the stick as a whole I think is not here needful I leave that to Philosophy

Or to name the parts of the Eye how the sight ~~to the Optic~~ to the Opticians ~~nerve~~ paseth to the Brain is not to my purpose I only intend to make as plain as I can how appearances of formes may alter by motion either nearer or further off direct crowed or obliq and how to collect these formes truely on a plane or Medium either as they are truely geometrically in themselves, or as they shall appear to be in any position that motion can place them in order to which I begin with some few Eliments, as these three a point a terme, a streight line a square and the formes compounded therefrom viz a Circle, a Cube, a Cone sphere

a point

A point is the form of nothing it is only a term of distinction as a note where a line begins ends or is Intersected and has no dimentions which is called a Mathematicall point which is as much as to say it is, nothing but a mark of position

I begin with a strait line which having length without Bread is an accident to Body is a supposed something that is, it always has some length so represents or [illegible] some part or quality — appertaining to Body as Breadth length or depth or some part of these and represents duallity or viz beginning or ending something in the lowest degree represents matter {or substance or Body — which hath beginning and ending subject to renovation and perishing formes

A Circle is the form of Unity is a whole line defined in Unity containing and bounding space. and represents uniformity or something in the Highest degree represents motion as a whole unity, without beginning therefore no ending, ever the same — containing Universality of forms

A streight line may be supposed of what length we please so a Circle may have what radius we please and these two may be added and substracted the one from the other as I shall shew hereafter

A strait line may

(27) Fancy a man walking in some retired field, far from (96
noise, and free from prejudice, to debate the matter with him-
-self: and then judge, whether such Meditations as these
would not be just. I think I may be sure, that neither lifeless
Matter, nor the vegitable Tribe, that stone, that flower,
that tree have any reflex thoughts; nor do the sensative
Animals that sheep, that ox, seem to have any such thing,
or but in the lowest degree, and in respect of present objects
only. They do not Reason nor Discourse. I may therefore
certainly pretend to be something much above all these
things. I not only apprehend and consider these externall
dd Objects acting at present upon my nerves, but have Ideas
raised within myself of a higher order, and many: I can,
not only represent to myself things that are or have been,
but deduce many other from them, make excursions into
futurity, and foresee much of what will be, or at least
may be, by strickt thinking, I had almost said, get into
another World before hand: and whither I shall live in some
other state after Death, or not ~~I doubt~~. I am certainly a Being
capable of such an Expectation, and cannot but be solici-
-tous about it: none of which things can be said of these Gods or
these Brutes. can I then be designed for nothing further,
then just to eat, drink, sleep, walk about, and act upon
this Earth; that is to have no further being, than what these
~~further~~ Brutes have, so far beneath me? Can I be made capa-
ble of so great expectation, which these animals know
nothing of, happier by far in this regard than I am, if we
must die alike, only to be disapointed at last? Thus place,

Just

just upon the confines of another better world, and fed with hopes of penetrating into it and enjoying it only to make a short Appearance here, and then to be shut out, and totally sunk? Must I then when I bid my last farewell to these walks, when I close these lids and ponder blew regions and all this scene darken upon me and goont, must I then only serve to furnish dust to be mingled with the Ashes of these Herds and Plants, or with this diff under my feet? have I been set so far above them in life, only to be level with them at Death?

This argument grows stronger in the Apprehension of one, who is conscious of abilities and Intellectual Improvement, which he has had no opportunity here of shewing and useing, through want of Health, want of confidence want of proper place & want of liberty

It grows stronger still upon the Apprehension of one, who reflecting upon the hard treatment he has met with from this World, the little cause he has given for it, the pains and secret Uneasinesses he has felt upon that score, together with many other sufferings which it was not in his power to prevent, cannot but make a silent humble appeal to that Being who is his last and true Refuge, and who he must believe will not desert him thus.

1 Equal to which is the Geometrical Place or form of Body or Motion
2 equal to which is practice of
3 equal to which is the Doctrine of lines or Perspective

Beso to handle lines, shuld as for the most part are supposing of Body form or Place traced on an elected Diaphanous or pan ie: pane set erected Place by Cin. or rays. Interpreting it in all its visible parts from a ceiling

Science may be properly divided into three sorts

first the knowledge of things as they are in their own proper beings their Constitutions properties and operations whereby I mean not only Body but Spirit or motion also which I call φυσικη or natural Philosophy the end of this is bare speculative truth

2 Πρακτικη the skill of right applying our own powers and actions for the attaining of things good and usefull the most considerable under this head is Ethicks which is the seeking out those rules, and measures of actions which lead to Truth and the means to practice them the end of this is not bare speculation, and the knowledge of Truth, but right and a conduct suitable to it

3 The third Branch may be call'd σημειωτικη or the Doctrine of signs the most usefull where of to my present design is lines; the Business where of is to consider the nature of signes the mind makes use of for the understanding of things, or conveighing it's knowledge to others for since the things, the mind contemplates are none of them besides itself, present to the understanding tis necessary something else, as a sign or representation of the thing it considers should be present to it and these are Ideas and because the Ideas of one Man's mind cannot Imediately be laid open to the view of another; nor be themselves laid up any where, but in the memory, which is apt to let them go and loose them: Therefore to communicate our Idea's one to another, as well as record them for our own use signes of our Ideas are also necessary those which men have found most convenient, and therefore generally make use of are as to forms are lines either curved or strait or mixt the consideration then of Ideas and lines as the great Instruments of knowledge make no despicable part of their contemplation who would take a view of motion in the whole extent of it and perhaps if they were distinctly weighed and duely considered they would afford us another sort of proces than what we have been hitherto acquainted with

90

+ two foot in another Paper

Ψ no broader in dto

Φ If from (as Learned Men) Principles

ꝺ

♡ p had obstinately rather ~~burnt~~
to those who have been called
wise than dipt into er

1st Prejudice & Slavishness; the first makes us take up any thing for truth that seems consonant to our received Errors, which we have sucked in for truth from our Cradle, or received by prejudice in the Education of our Youth

2dly Slavishness or Slothfulness which so often confines us to the opinion of others that we think it a crime to differ from them, and had rather take it upon trust than to be at the trouble to prove it otherwise. Strange would that Man now a days be, to think the Sun no more than three foot over because he believes in others or his senses which perceives it no larger, or a Man to confide in those Philosophers of old who held the same opinion, that it was no bigger than a Trencher. If from such Principles be taken, they are fatal, when their childhood errors, or their inborn notions (as they call them) by Lazyness or fear often grow up with, and are so radicated in them, even to the durance of old Age, when they also grow fond or obstinate of their dotage being (with a loss of reason) apt to think it too late to begin de novo, for to search for truth and had rather set down lazyly with what they have, and trust to those who have called wise, than dive into difficulties which may prove their long experience errour, so end as they begun, in Ignorance.

The line of Truth { so that our perception may be the rule and line of Truth

(30) Lock b: IV C: XII p: 327 } Says that we should not take doubtfull systems for compleat Sciences; nor Unintelligible Notions, for scientifical demonstrations (100

p: 328 } He that shall consider how little general Maxims, precarious Principles, and Hypothesis laid down at pleasure, have promoted true knowledge or helped to satisfie the Inquiries of rational Men after real Improvements. How little the setting out at the end, has for many Ages together advanced Mens progress towards the knowledge of Natural Philosophy, will think, we have reason to thank those men, who in this latter age have taken another course, and have shod out to us, though not an easier way to learned Ignorance yet a surer way to profitable knowledge

oe

Rest { a point as to position but capable of direction viz a whirling
— as to place a point extended with variety of position
ergo divisable or duality

⊙ Motion with direction ever the same unity beginning any where i:e: no where ergo Infinite and coeval with itself

△ motion limited with variety of direction coeval to a (major, minor) distance

1 {motion} 2 {rest —} the two Principles of generation { a priori tous unknown but must com from God / Posteriori

'Tis difficult to have any Idea of what motion may intuitively be represented by, so as to enlarge compound, and abstract, through all the Infinite series of operations I can find one form only to dilineate it capable of giving an other a clear conception of the Impressions made in my own Brain from outward Objects on my senses, so as to convey the same adequately

Adequate to ~~as to a~~ another's as a ground work whereon (for)
to build a structure so sublime which may be capable of towring above
the Cloads taking our Rise here reach that vast extent of the Sun itself
or as far as the Eye can wander or sence or reflection ~~can~~ Contemplate

Pardon me These last words from the meaness of the Capacity
may look superbe I speak not as a face Painter which is the study
has taken most of my ~~leasure~~ years But as a real Lover —
elevated by the little Glimpse of Geometry (That noble science
into a rapture of thoughts what may not be done! when —
three or four lines be algebraically methodized as to place
in position and as to Intersection thro' all its finite series of divisi:
bility by such Superiour Genius's as the world now enjoys
by this method I now bring to Light which must have lain
dormant with me for want of Leisure from my proper busi:
:ness or been detarded by the dulness of my Capacity I own
tis a Child not lawfully begotten I being wedded to face
painting yet ~~but~~ it is natural
which I don't question when Sir Isaac Newton Captn —
Haley or shall weed it The Theorem will then be like a
flower transplanted to so good soil the world will resp
the Beauties and I be pleased that chanc'd to find the seed
in an adjacent spatious field my amusing walk where
att Leizure Hours I with pleasure used to regale myself
in much delight as well as profit by ~~painting~~ knowledge
for if painting is a flower Geometry is a near relative
~~of the Elder Branch~~ or if a Plant that is the Elder Branch
or which painting would it thrive must be grafted on —
so a Pillar should have a right Bases to support it; where a
foundations wanting the fabrick soon must tumble, could
it be ever rear'd;

(1)
That the visual rays of sight be in strait lines

2 3
And the figure comprehended under the Rays is a Cone the top or apex of which is a point or the Center of the Eye and its Base hath the extream concourse of the whole Pencil superficies of the Eye rays Intersected on the diaphanous plane or medium perpendicularly placed to the Eye's radius

3
And the Cone which Includes the full or Whole Pencil of rays with in the power of one momentous sight, The angle at the Apex must be 90 and no more for what goes beyond is absurd as being beyond the regular bounds of sight limited which nature gave to direct us Justly not to misguide us for we see regularly or intirely only those things that these limited visual rays take in

4
And that we see not those things that these limited rays meet not with in the medium

5
That the things which are seen under the greatest Angle appear the greatest 6

And those that are seen under a less Angle are seen less

As those which are seen under equal Angles appear equal 7 8

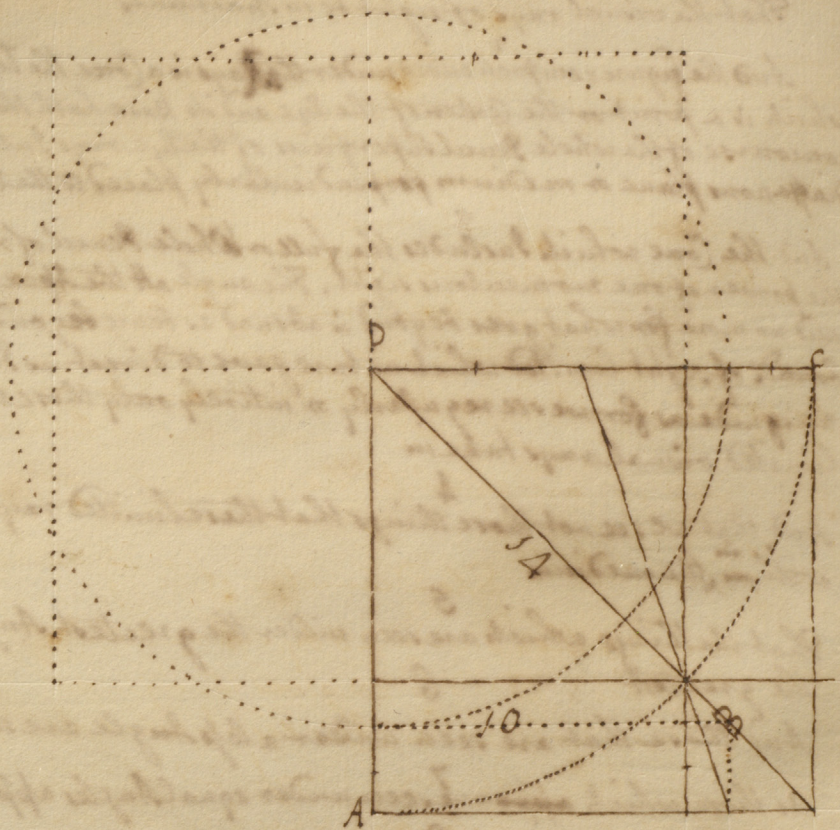
And that those that are seen under rays more elivated appear more elivated 9

And those that are seen under rays more lowerid appear lower 10

And even those that are seen under rays tending to the right appear more to the right 11

And being seen under rays tending to the left also appear more to the left 12

But they which are seen under a greater quantity of the Angle of 90 are more evidently seen as the Angle of ninety being the utmost perfection of vision



see 49. 45. 50. 53. 65. 73. 100. 128. 152.
and 2 the other side the book

Supose D B to be the radius to the Circle A B C and divided into 14 parts the Diameter of the Circle will consequently be 28 and the side of one of the A Included Squares being 10 of the same parts which being doubled makes 20 the whole side of the Included Square which side as a fourth part of it self cuts off one fourth part also of the Circles Periffery in two extreams as comon points dividing it self and the Circle equally by the two sections. Now 'tis visible that the Circle contains much more than the Included square doth, and that the Radius if granted 14 that it is necessary to find a leser Radius that may strike a Circle equal to the Included square, and that radius will be 11 1/3 and the side of the square will be 10 both which being doubled makes 22 2/3 for the Diameter of the Circle equal to the square, and 20 for the side of the Included Square equal to the Circle— Numerically proved thus

Supose { The Diameter of the Included square / Including Circle } the same viz 28 then divide 28 by six and the Quotient will be four which added to 28 gives thirty two which dividing by four the quotient makes eight which substracted from the first Dividend viz 28 remains 20 for the side of the square sought which is comonly called the Root in Numbers thus

6) 28 (4 — 28 — 28
4 — 8
4) 32 (8 — 20
remains 20 — 9 ad

A Square whose side is a line divided into 10 parts

10 = □ square

requires the fourth part of a Circle when extended into a strait line to contain 11 of the same equal parts with the Square and 1/3 to give a length to a Radius for a Circle equally containing the same area or contents as the square doth without a remainder

11 1/3 = ⊙ radius

The diagonall to the said Square requires 14 of the same equal parts of the side which is more by four than 10

14 = ⋱ Diagonall

as Example the side 10

$5\overline{)\frac{7}{70}}(14$ = Diagonal found and e con:
$\quad\;\;20$

suppose 14 the Diagonal given what will be the side then say

$7\overline{)14}(2 \quad \frac{14}{2}$ $\qquad$ $\frac{14}{4}$

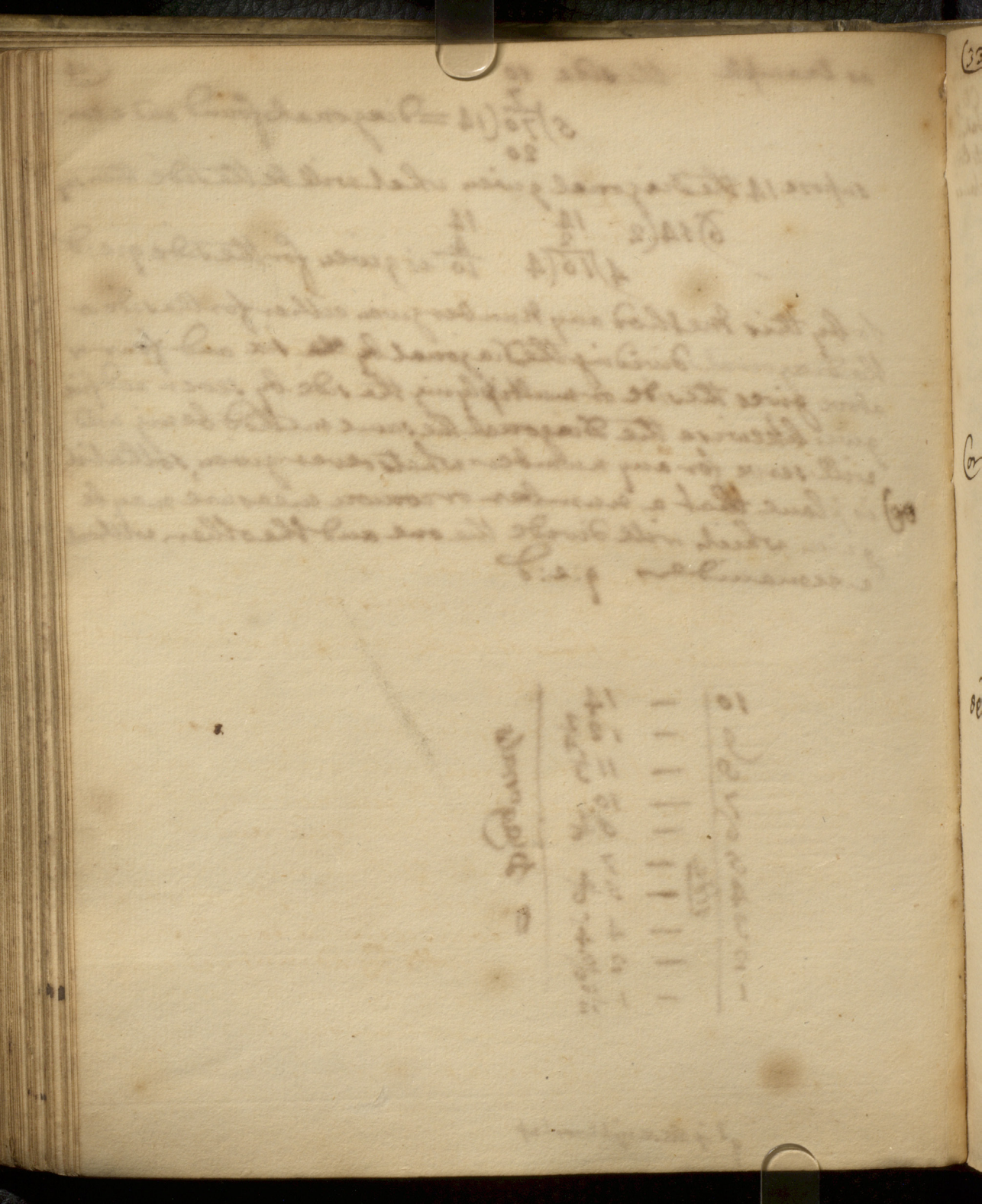
$4\overline{)16}(4 \quad \frac{4}{10}$ is given for the side q:e:d

So by this Method any Number given either for the side or the diagonal dividing the Diagonal by ~~the~~ six and four as above gives the side or multiplyiny the side by seven and five gives likewise the Diagonal the same method beiny used will serve for any number whats ever given, so that it is plaine that a number or comon measure may be given which will divide the one and the other without a remainder q:e:d

10	—	14	
9	—	$12\frac{3}{4}$	
8	—	$11\frac{1}{3}$	Diagonals
7	—	10	
6	—	$8\frac{1}{2}$	
5	—	7	
4	—	$5\frac{4}{6}$	=
3	—	$4\frac{1}{4}$	
2	—	$2\frac{5}{6}$	
1	—	$1\frac{10}{12}$	

1 Rule

q[3] if the side right has Lup



1 The sight takes in no more than an Angle of 90

2 an Angle of 90 from the Center of a Circle is a quadrant

3 The Cord of a Quadrant is the side of a square ~~square~~ bounded within the Circle circumscribing that ~~Quadrant~~

4 The side of the square is a fourth part of the squares Circumference

5 The fourth part of the Circle's Periphery is the Bow of the Quadrant

6 The whole Quadrant is the fourth part of the Circles Area

the Angle of ninety is the 4th part of the squares area

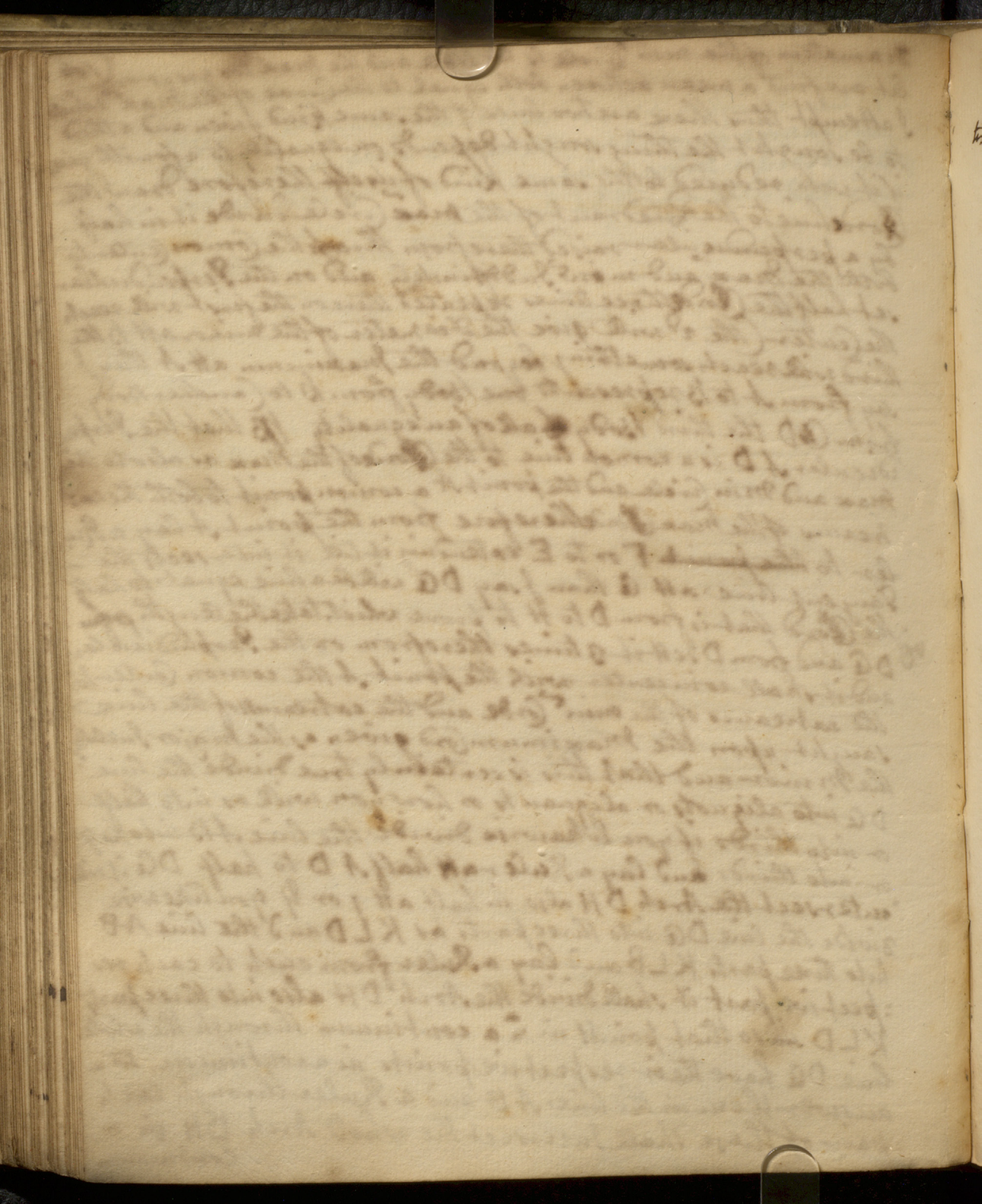
Cor 1 From hence we gather that an angle of ninety from the Center of an Including Circle both gives the side of the Included square and the Quadrant by two Comon points taking in the 4th part of the Circles Periphery, including the fourth part of the Circles Area and the fourth part of the squares area also by the said three comon points viz the two which terminates the bow of the Quadrant and the Center of the Circle comon to all

Cor 2 Therefore the side of the Included square taken for the Diameter of a Circle will make a Circle but half as big as the Including Circle now these two Circles will be in a double ratio one to the other and we will call them for distinction sake the Max and Min Circles now the Diameter of the Min Circle which is the fourth part of the Included square coincedes the fourth part of the Max Circle or the bow of the Quadrant yet cannot be so great as the curve line which coincides with it as Axiom —— page but is lesser than the Diameter of the Max Circle to prove which draw a Tangent to the Max Circle at D equal to the Diameter then say I the

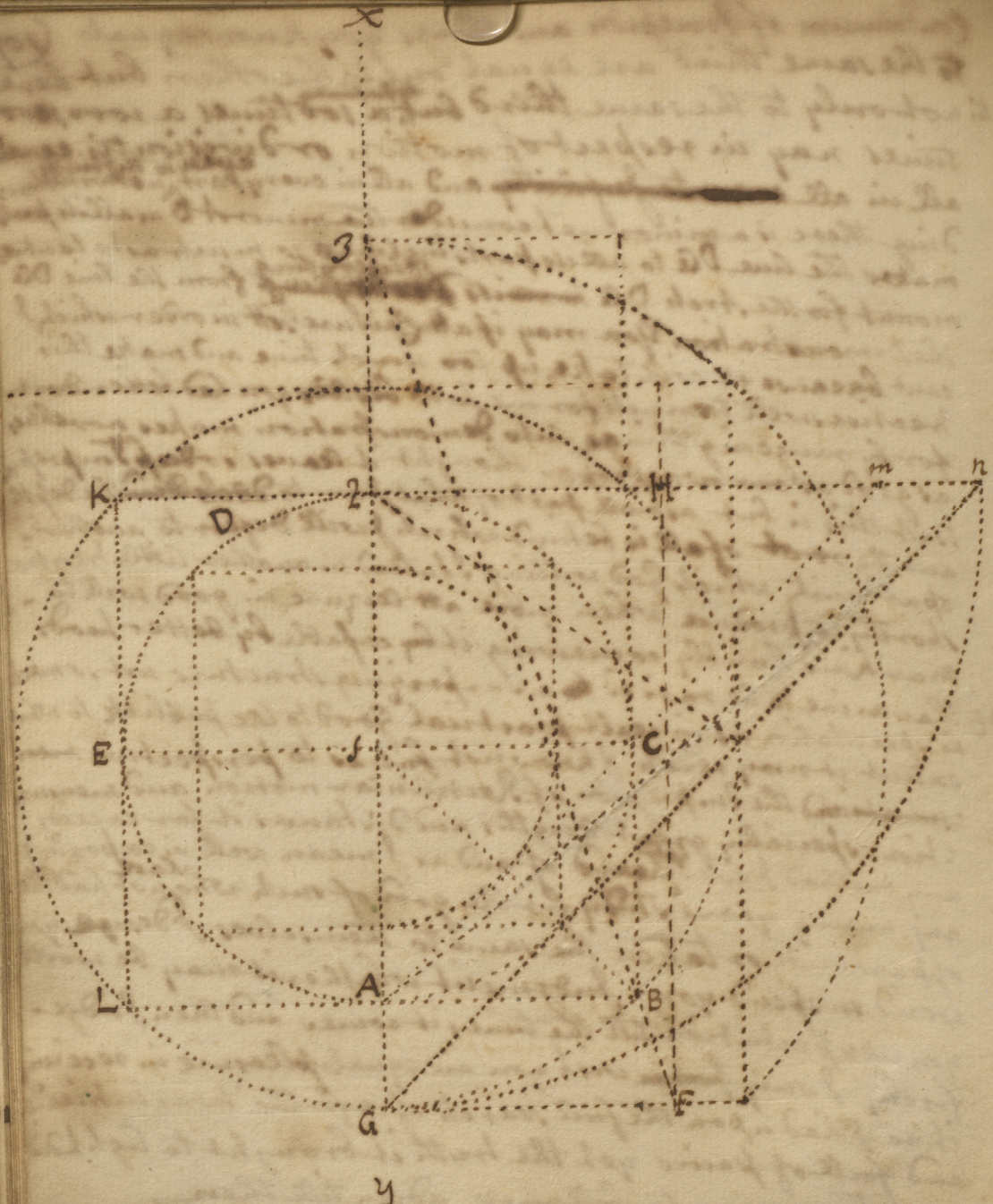
Diameter

AB is the Object seen of such a bigness. CD is the Medium through or on which the Object is seen or drawn and CD is the Distance given to keep the medium in a mean station between the Object and the sentiant which represents Body then a medium equal thereto as the Air then the distance from the Medium

Diameter of the min Circle is too little and the max too great now
let me find a mean between both equal to the Curve of the max which
I attempt thus there are two lines of the same kind given and a third
to be sought the thing sought depends on equality to a fourth given
if it were reduced to the same kind of it self therefore draw the
Cordeline to the Quadrant of the max Circle divide it in half
by a perpendicular raised there upon through the Comon Center to
both the max and min Circle indifinitely and on the Perpendicular
set half the Corde three times repeated there on the first will reach
the Center the 2d will give the Diameter of the minor at B the
third will reach something beyond the Maximum at A then I
say from A to B represents one Body from B to C another Body,
from C to D the third Body all of an equality for that the Perpen-
:dicular A D is a comon line to the Corde of the max as also to the
max and min Circle and the point A a comon point to both the ex:
treams of the max Corde therefore from the point A lay a Ru:
ler to the point F or to E extending it till it intersects the
Tangent line at G than I say DG will be a line equal to half
the Corde that is from D to H to prove which take the length of
DG and from D sett it 3 times therefrom on the Perpandicular
and it shall coincenter with the point A the comon Center to
the extreams of the min Corde and the extreams of the line
sought upon the Maximum Cord given as the major Including
the Minor and that this is certainly true divide the line
DG into aliquots or aliquants or how you will as into half
or into thirds if you likewise divide the line AB into half
or into thirds and lay a Ruler at half A D to half DG it will
intersect the Arch DH also in half at I or if you likewise
divide the line DG into three parts as K L D and the line AB
into three parts K L B and lay a Ruler from each to each res
:pective part it shall divide the Arch DH also into three parts
K L D so that points in a continuum through the whole
line DG have their respective points in a continuum answer
:ing them in the line AB and a Ruler through each
pair of these shall Intersect the whole Arch DH in a
continuum



Continuum of Proceſion and things you know equal to the ſame third are equal one to the other but here is not only to the ſame third but a 100 times a 1000, 1000 times nay in reſpect of motion or diviſion this equal all in all ~~me to Infinity~~ and all in every part to infinity even to nothing ding there is a minor yet conſider the minor A B in all its parts makes the line D G to all its parts inclining ſo much as to tantamount for the Arch D G ~~to all its Problems~~ diverging from the line D G the Demonſtration. You may if at Leiſure ſett in order which I cant because it will take up too much time and make this treatiſe swell too much for me to do beſides you had better doit for by rangeing things into demonſtration makes novelties as good as our own proper thought it leaves ~~so deep~~ an Impreſſion and the ~~root~~ of all is behind which I will defer to another opportunity which God willing I dutead in another little treatiſe ſhortly to produce when mine att leiſure is good will to mankind humbly conceiving it ~~by~~ capable by better heads than mine to be raiſed to a ſurpriſing ſtructure not ſo much in ſpeculation as in reall practical Good to the publick to what extent it may reach I know not but as to perſpective ~~matical~~ and the Impreſſion of Rectiliniar motion and menſuration eſpecially great lengths and diſtances it far exceeds any method I ever ~~heard~~ read of and as I mean well in expoſing my many years ſtudy for the good of ſuch who ~~not~~ have had the opportunity or taken the ſame to themſelves I deſire you would ~~ſuſpend~~ your Judgment whether it may be worth your expectation till the times it comes and then Judge freely I only ~~Judge~~ wiſh you an equal pleaſure in receiving it as I had upon the full ſearch of it for tho' it was intricate and full of pains yet the truth it brought to light did more than counterballance adieu till then.

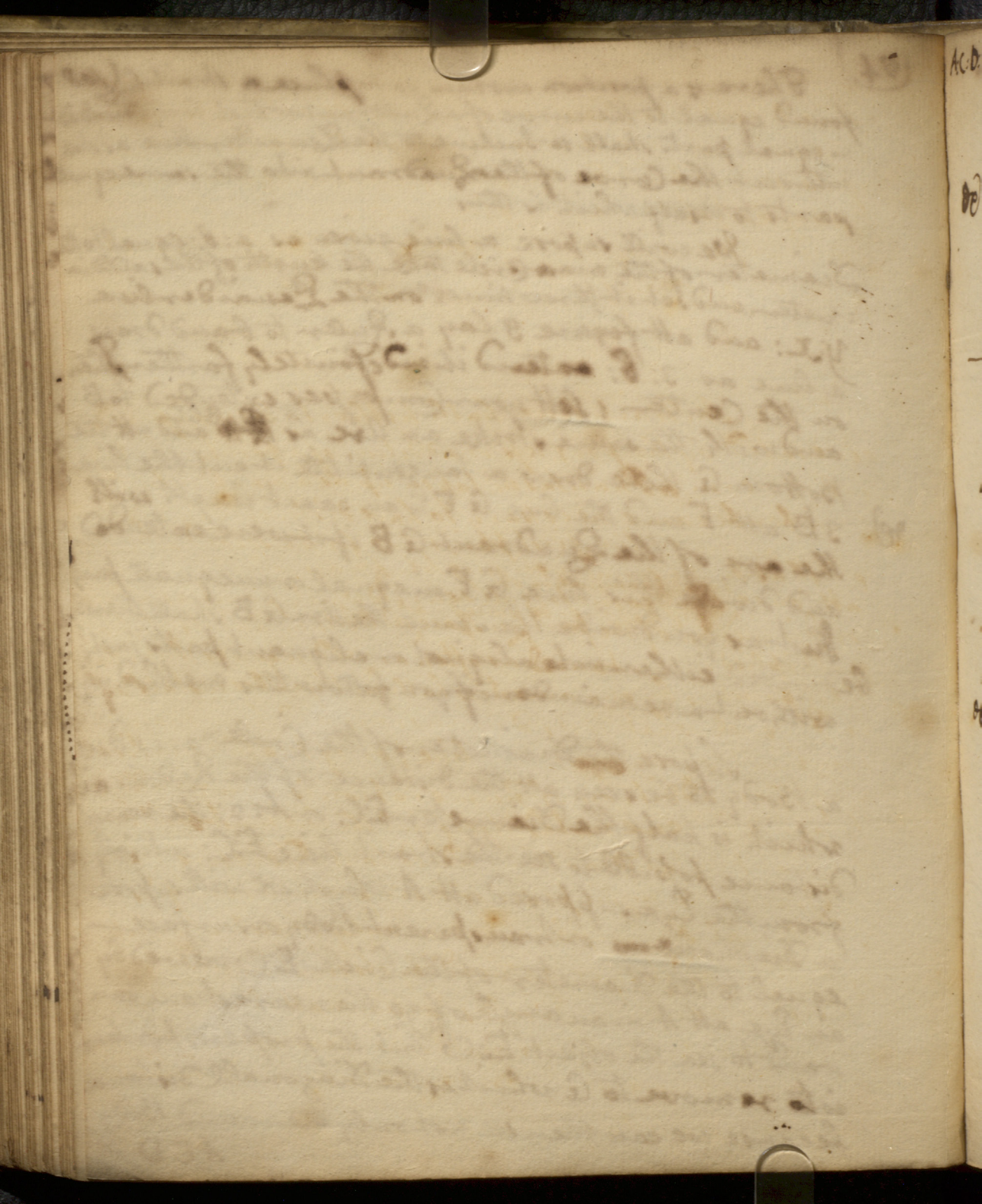


See 2. the other side the book
See 42. 46. 50. 63. 68. 73. 103. 128. 152

There is a position certain so to place a strait line (108
found equal to the curve of a Quadrant which being divided
in equal parts shall so Incline to the Remainder line as shall
intersect the Curve of the Quadrant into the same equal
parts to itself which is thus

We will supose a line given as a: b: equal to the
Diameter of the main Circle take the length of the said dia
: meter and set it three times on the Remainder line
Y: X: and att figure 3 lay a Ruler to band draw
a line as 3: B: extend it indefinitely farther then
on the Center 1 sett your Compasses extended to B
and with the same strike an Arc as B G
Bottom G there draw a tangent' till it cut the line
3 B att F and the line G F is an exact length will
the arc of the Quadrant G B if it were extended.
and divide this line G F in equal or unequall parts
Just as you divide the same the Arc G B shall thereby
be divided either into aliquot or aliquant parts just,
without a remainder if you follow this method. viz

Supose the Diameter of the Circle a: c: d: as
a Body to be seen att the distance of the Radius a:
which is half the Diameter E: C: or A: 2: the nearest
distance possible to see the strait line E: C: intirely
from the Eye supposed att A which we will supose
a Diaphanous or transparent Body or surface
equal to the Diameter of the Circle E: C: viewed by
an Eye att A in an angle of 90 the nearest one can
stand to see the object E: C: but the properest distance
is to remove to G which is the Diagonall distance
because we can then see not only the round Body
A C D



A:C:D: But also the Square Body B H K L as for example standing (109
att A tis true we may see a line of just the extent of E:C:
as the line M A takes in 1:C: as on the other side 1 E which
is the same Angle but if we supose E C to be the Diameter
of the Body A C D E then I say we cut off soome of the
Body equal to the arc of a quadrant A:C: but standing
att G we just take in the whole A C D E by the line G N
proveing a taugent line

---

(35) A Strait line hath hitherto been supoed
generated by the progress or addition of a point (which I
call a Term or Phantasm, taken up as a mark only (thus
number became necessary to have distinct names or
sounds as one for the first point two for the second and three
or that by the sound ~~examination~~ of
att once ~~the~~ one great (search) which point as a note
of distinction of the part in place ad libitum and its station
multiplied i:e: distanced as often as need requires) but what
their point is by our ancestors hath not yet been stated for-
if Physical what is its Dimensions and how many wold
compleat such or such a line; or if Mathematical
why then addition or numeration is vain for add o
to o and it generated itself and the line must still be
but that point and nothing added to it Therefore I place
a strait line in the place of their point, as my first
Material Principle as a form only of extention capable
of division addition or gathered (by observation given) from
the supposed axis of the Worlds Earthy matter or on which
nature of Terestial things makes their constant revolution
thus a length is given and may be conceived in terms
nature as a sure form of length of something without
Breadth

Breadth in perfect Rest reflected and terminated by
two extream points as the Earth with its Atmosphere in
its two Poles vizt North and South But the Orb of the
Sun Moon or Revolving on the axeis of the Ecliptick accor
:ding to their Sphere of Levity of Celestial Nature or its
active power of Circular motion as the first and chief
movers in Secondary causes under Gods ordinance of
the Creation; are to humane understanding incompre-
hensible that the Sun and Planets should by their direct
Spherical motion on the axeis of the Ecliptick Line cause or
give motion oblique, to the Earth on the axeis of the Aequinoct
:ial by the Impulse or attracting rays of the Sun or which is as
much as to say that the Curved and strait lines by a conjunct
influence of the Sun tigent or moving Power through their
&c Cloak upon hitherto Heterogenious ways could harmoni
:ously blend contraries so as to cause produce or generate
an oblique line or one neither crooked nor strait but
analogously inclineing, or compounded, between both
by the Energy of their Union; That they are as Commen
:surable with each other and may be infinitely divided,
substracted, (not only here) but perfectly and as easy as
two streight lines may and as plainly demonstrated altho
not hitherto exposed to the world

13 A strait line is terminated by two extream points and
amongst all the Intermediate points (if we suppose a motion
thereon) there can be not two points thereon Equidistant from
either of the two extreams nor above two Equidistant thereon
from any point whereso ever placed about that line so —

multiformously

A Sphere is generated by a ~~Circle~~
Semicircle turning round its
Diameter

multiformously different are they and therefore it may be called (in respect of motion) the way of multitude or disagreement in itself 111

A sphere is a body without distinction of parts outwardly of one single surface every way equidistant from its Center inclusive of Space ~~which~~ has a whole body with three dimensions viz length Breadth and thickness

the Circle is the representative of a Sphere

The Circle is without beginning or ending: assume a beginning any where it still terminates in itself inclusive of Space and its Center is equidistant to all the Indefinite points that may be placed on its Periffery as to itself no point is uppermost or lower most nearer or farther off but is an Unity in itself void of diversity wherefore Plato called it the ~~Sun~~ Sphere

The Cube is generated by lifting up a square plane Perpendicularly equal to itself

The Cube hath six = surfaces, twelve streight lines = hath 24 right Angles eight points in which those Angles meet its Center is equidistant from the eight points i: e also from the 24 Angles or what is the same thing equidistant from the extreames of the ~~twelve~~ lines But in respect of the six Surfaces or twelve streight lines the Center is Infinitely various throughout their parts and may be called diverse as Plato called it the ~~Mother~~ Matter The representative of which on a Plane is a square which Plato calls the Other

The Cone

Is generated by a right ~~Angled~~ Triangle of three streight lines turning round its Perpendicular

The hath

Hath two Surfaces oblique to each other one surface
is: the side may be suposed to be generated by a streight line
plauted a slope from the Apex to the base and turning round
will generate the side of the Cone by Infinite streight lines
equally Oblique concentring in the Apex or top and and ter-
=minateing in the Periphery of the other surface the Base, and
likewise the same Surface may be suposed to be generated
by a radius of the lower base fastened to the streight line on
the side of the Cone by turning round by Infinite Circles from
the base to the Apex all equal to each other still lessning by
Infinite degrees to the very Apex which is a point (This Cone Let
us suppose when seen through a Plane Diaphanous cutting through
the Apex thereof appear an Equilateral Triangle & the repre
=sentative of the Cone) And the plane at the base being a true
Circle may be suposed if divided into equal number of Circles
and the Center thereof drawn to the Apex will be a perpendicular
to the base plane and the Circle within the base plane will
correspondantly equall the same number of Circles by raising
Perpendiculars from the divisions on each Circle of the
Base to the sides of the Cone will necessarily generate an
equall Circle each to itself so that a Cone is a compounded
representative of the Curve and streight line as a mean
between them both if rightly placed as by demonstration
will shew it.

This streight line found as aforesaid that it is, and as a diviso
how it is / and by addition of its self at each extream and at the point
of contact in an Oblique position in an Angle of 60 and a
Perpendicular let fall therefrom will generate a Cone cut
itself in its Center then suppose the perpendicular an axis on
which motion should be whirled round will generate a Cone
the base of which would be a perfect Circle which Circle by
the Diameter generating it would at the same time have traced out
indefinite

indefinite degrees on its periphery informing of it this of
necessity thus we have got a streight line as a note of distinction
in what part of space you would take notice of as where your line
plane bed or field is marked to be or divided or how often so marked
or divided as notes of distinction or numeration

A line a Triangle and a Circle by the position of a line
found and added to itself only so as to circumscribe space and by
a superaddition of motion added to it we generate a Circle and a Cone
as a mean representative of both from hence it will be easy to
generate a sphere by supposing a Circle turning round its diameter
thus have we the three material Bodies to which Motion and
rest being added gives Plato's 5 materials viz. Entity, Duality,
diversity, motion, and rest.

Two things or forms tho' hitherto thought to be Heterogenous
to each other so as never capable to be blended together or
become coincident in any wise so as to divide each into simi-
lar aliquot or aliquant parts without a remainder.
(but they are met together and embrace each other) which are
strictly to be regarded in all our conduct tracing perfectly
the Law of nature if we would practice truth smile they
unite so amicably together, here is our Proposition or
Problem which may be called the plan of our Initial Universe
proceeding from our Axiom in the Circle and the Straight line
be coincident Homogeneal tho' hitherto contrary to the
opinion of the world and their Doctrine yet as true as a
whole is greater than its part

If by the use of proper Media any thing can be shewn
to be or not to be, I care not from whence it takes its rise
either from the Subject or from the Attribute either way
propositions may beget their like, and more truths may
be brought into the world.

There goes a story that once upon a time Jupiter or rather Celum goeing his progress through his unknown regions of his Empire and Mercury with him as his steward or Secretary he paseing by an out of the way unfrequented path he heard a rumbling disagreeing noise and asking Mercury what it was he told him 'twas matter which lay forgotten pent up behind those clouds in a narrow compass which by his comand was ordered to be thrown aside till a fit opportunity he should call for it. Oh thats true I remember it bring it hither it now suits with my present ideas, rip up its hide boiled case, as as soon as ever you have rebell it to this certain place point I stand in quoth Mercury I am just goeing to execute your comands Be nimble than saith Celum. Upon the rip Mercury gave it an explosion ensued and there issued out a grosse fluid which rusht forth and filled with a dark vapour a vast expantion round about. Mercury was astonisht and stood as thunderstruck sometime but when recovered and looking about he saw by the beams of light which sprung from Celum that there descended Infinite atoms down in strait lines every way from all parts around him where att some distance below his feet they seemed to meet something gathering and it visibly grew not only conspicuous but of a considerable extention of a round form opake and motionless still as this Ball or globe grew the expantion round about Celum and Mercury cleared up and began to be as Lucid as before the eruption att last when all things were husht and still and no farther encrease appeard in the opake Globe and Mercury viewing all around him he observed as there was an opake map below his feet as one extream so over his head there was another extream Lucid Spherical accumulated body in such a manner that

that the place Mercury stood in seemed the Center between the Opake and Lucid Bodys in a direct line and over head and all around there began smaller Lights to appear in great numbers and at several distances Mercury wondered what all this should mean and as he had for some considerable time stood gazing and musing on these surprizing Objects increasing and found they now to stood perfectly still each in their places and nothing new appearing He then asked Calum what this mighty Scene was for and to what purpose they stood there motionless to which Calum replied have patience Mercury and observe a little farther and you shall find all what you see now still and not or less at one touch of my finger one at once begin to change position and vary into several forms before your eyes, with that Calum with a round in a sky now take notice Mercury of this great Light over your Head see upon that twirl how it begins to wander from you the rest will do the same but not all equally alike for some move faster and some slower some further off some not so farr but all obey their Leader and move proportionally to their distance from him either exteriorally or interiorally i:e: faster or slower analogous to each their position from the first mover. Mercury observing that the Lucid Body had gone so farr from its first situation and became so Low as to begin to be obscured by withdrawing behind the Opake one when it seemed Just even with his Eye he asked Calum where it was going and whether it would return again or no to which he was answered have patience and observe further that when you are my Ambassador you may inform the world with a true Hipothesis and looking about on his right hand he saw another Light Just appearing something Less in Appearance of its Circumference but infinitely weaker in its lucid Quality for its beams seemed faint and pale easy to be beheld whilst the rays of the other Mercuries Eyes were too weak to look steadily thereon. Now Mercury the Greatest Light is going in which you felt so great a warmth therefore fit for action it being with him time to go to rest and let the Polar Light supply its place

Q. what these words were

Q. Is not somewhat wanting

its place to those whose soft passions shall lull them to enjoy
where cold ~~and~~ and wanking visions of a Gloomy Light consol-
:ant to their loved privacy and to the recruit of Spirits Lost
fittest for Rest and repose to which her cool influence inclines
the tired Spirits till day rouses the blood to action This fixed
Orb I call the Sun Lett his continued Light from his rising
to his setting be called day and lett this fainter Light be
called the Moon and lett her ~~be called the night~~ the Night and lett
those numerous Lesser Lights each have their Influence and
Imprimis let all these be governed by one Law the Suns motion
only viz (circular motion) as Principle and Agent under me
and lett matter be the Patient inactive of it self endued
only with necessary motion as gravitation in orbem
towards the point of rest and capable of impress motion
by strait lines received from outward Pulsation or
attraction two manner of ways viz in ~~two~~ lines direct and
oblique both in a manner that I may so say equal to the pa-
:rent quality of matters (viz) gravitation for both the Oblique
and the direct in respect to any assumed point standing on
the Earths Surface are really at one and the same moment
to appearance in espe to the posited Eye that beholds the whole
Spherical operation of Gravity all tending to the Earths Comon
Center to which matter naturally lifts from all higher
parts around faster or slower according to its specifick
Gravity unless the matter meets with a fluid whose density
adequats with its own Levity then that it swims in that
vortex wherein it is attracted by the Suns Influencing powe
but then even then the Circular motion runs through the
whole Obliquity ~~of the~~ of the
same space by successive motion which gives us the appearan
have of perishing distance of which no parts exist together
but follow each other in succession for if
the Earths Surface We suppose a tangent line struck and
to the assumed point a perpendicular line let fall from
the Zenith point and if on any ~~point~~ Hand of that Per-
pendicular

pendicular (so there be in orbem supposed infinite atoms ad-
above each in their place falling towards the Earths Center) from
the Zenith the whole obliquity is the same as a whole but this one
is seen altogether and the other successively or temporariously
according to the progress of Motion there be contained the
whole degrees of obliquity in nature since nothing i:e: no strait
line may be said to be oblique but only in respect of another so-
position to it so a Perpendicular from the Zenith to the tangent
point is a plumb line no way oblique in respect of its
own position to the Zenith line because it coincides with the
very space its own length takes up through the Medium
or Air which a priori was the same with the Zenith but as
much as the Perpendicular line declines from the Zenith
towards the Horizon such or so many degrees as it is moved
from the Zenith is counted its obliquity even until it coin-
cides with the tangent or Horizon Line which is (supose 90
Degrees) the utmost obliquity in nature

The pressure of Light is perpetuall as if one part
of the Air being carried away another succeeds it with
the same impression which the part carried away had
received before
which sound doth not but dissipateth the nearest
part of the Air to a considerable distance

Every whither the Aetherial Substance be not only
the vibrative motion of the Sun ergo without Gravity having
an equal endeavour to all parts of the universe i:e: to
the extremities of the Suns power of emitting his rays
in this respect the same may be said to be in the Center
of the world i:e: the Suns whole motion is in the Center
of the Sphere of his own activity to explain which I
mean the totum of his Central Limits are all the Infinite
points

points
thereof moving on the Periftery (surface) of the Ecliptick and his (118
expantion is in equal rays from his own center but in a duplicate
ratio of departing from one extream of the Diameters of its
Vorter to the other extream in respect of universal space
i:e: to a point in space or a moment in time stated

(37) Legrand pa: 134 Distinguished into Species

The Intellect takes a view of Body or matter and lays
open their Species properties, distinctions and mutations

Matter or Bodies may be considered after a twofold
manner viz: jointly or seperately, or as others expres it collec
tively or Distributively the Species of Bodies are collectively
considerd when they are viewed all together as the part that
constitute one whole or intire being. Distributively when
the chiefest Species of Bodies that compose the whole are in
a convenient order particularly examin'd

The whole which contains all the Species of Bodies is
a Sphere the figure of the world and in it is comprehended all
forms of figures of Bodies created by God by the most free motion
that his will hath given them beautifully adorn'd and most wisely
governd and may be thus defin'd the Structure of Heaven and
Earth and of the several natures and formes and figures
comprehended in them

The world or universe comprehends all and every thing
that can fall under our thought or sight as Body and its different
Species properties distinctions and mutations the Sphere is but
one onely containing all other forms or figures with their
Properties and distinctions and mutations each Species
hath its modes and distinctions.

The modes have their major and minor with all their
intervening modities as I shall explain underneath

vi: Cheines natural history

Of the Physical laws and the uniform Appearances of nature

By nature I understand the laws of motion which Almighty God has established throughout this vast Machine the Universe even from the Creation thereof himself the first mover inducing it with number weight and measure Substantial forms Radial Heat Hylarchic Principle, vis Inertiæ These are each in their turn a new Allegorical term started because the Old ones were found exploded as useless and coined only to prevent the exposing each Philosophers own Ignorance in the Appearances of nature useing means derogatory from the wisdom and power of the Great Architect of nature

My design is not to sett down the first Principles of Geometry intending this small treatise for such supposed to have gone through Euclids first Book of Definitions and Axioms neither shall I meddle with many such particular terms (useless in this my Inquiry) as these, Elasticity, Spontaneous, Refraction Cohesion, Centripetal, Centrifugal, Reeling motion of the Earth nor the Planets going round the Sun nor the moon in her Epicycle but I shall take care to make use of the fewest Words Principles and the plainest Rule for Demonstration avoiding such unaccountable shifts which one would think were Invented not to Illuminate but to veil the thing they pretend to discover or disguise the Beautyful and Charming plain face of nature with a mask of Monstrosity horribly deformed but amazingly surprizing therefore to many acceptable

my

My Principles shall be few such as these God, or Number, weight and measure, Spirit, Motion, time and Space, Body, or Matter, form, plain, or Medium, Surface Line, and point, or Center, proximity, and distance, a {Sphere / Circle} a {Cube / square} a {Cone / Triangle} Position, direction, direct, Oblique, and such like

Law 1st

All Bodies or Matter is endued with Gravity and ever tending to the Center of rest and will forever continue in rest unless some externall cause force a motion in it Since all naturall Bodies consist of a Mass of matter, weight and measure which by it-:self can never alter its primitive state of rest.

Cor: 1st

Hence it is Evident that Matter or Body ~~inst~~ is not Indued with Motion, but is meerly a passive inactive weight and rest is Essentiall to matter

Cor 2d

Hence it is Evident that when Body, it or its parts move it must be some exterior thing contrary to it-:self that gives the motion i: e: Matter is not endued with self Motion ergo not with a power to alter the course in which it is put by some exterior power for to alter its course of itself is to move of itself only in a particular difference which has been denied

Cor 3d

Hence it is evident that no Body put in motion will naturally and of itself alter the Course of its direction forward, either to the right or left any ways oblique for if so it may by the same reason turn back which is to say it hath motion in itself to change its course which has been denied

Cor 4th

Cor: 4th

Since then it is Essentiale to matter to be in rest, it is Evident that motion or the preservation of Body in motion does absolutely depend upon Almighty God as its Cause

Law the 2d

The Changes made in Body att Rest, into Motion is proportional to the Impress moving force and is produced in the same direction with that of the moving force

Effects are proportionable to the adequate causes

If a degree of force produce a degree of motion a double degree of the same force will produce a double degree of motion a triple a Doiple and so on always in the same direction of the moving force as the first mover

Corallery

Hence it is Evident a Body put into motion by such a degree of force if the force continue the motion also must continue did in the same direction

But by the word force its manner not being explained we are liable to a different modus of action which hath two different consequences i: e: a Body by its own motion giving the force, Impetus or Impulse to another att rest within its direction or a Body by its own motion giving the force of attraction to another Body following it within the line of the others direction these two will have different consequences for the first in its line of direction meeting a Body att rest it gives it if it be a Spherical Body an Impulse or an Impetus in a point only pushing the Body att rest forward before it in its own direction But the second being a like Body Spherical and going before another Body att rest it attracts draws or moves the Body after in proportion to the it pushes against quantity of Air Volume of Air that Succeeds the Surface Plain of the Body passing The motion there is and going the same direction

The motion of any of the Celestial Bodies in an orbit there is necesary required Levity and gravity to and from one comon Center about which the Body moves The first being ~~moved~~ Impressed by an Infinite Power must act till he thinks fit to cause it cease and Gravitation (the body being Elevated in an Orbit where the fluid is with equal Density with the Body moving will force it into a Curvilinear Orbit so that in the first plale the revolution of these glorious Bodies are — independent of the laws natural or mechanical Power. Now this Secondary cause ie: Gravitation whereby every Particle of matter; and all the Bodies of this Universe tend towards one Center viz the Earth as the seat of rest and would never Cease unhill it reach it if did not an = Levity of the Body moving keep it in the fluid Orbit of = Density with itself but what keeps it moving on is some extrinsick power and consequently (since it must be repeated every minute) must be perpetuated in it by some uninterrupted influence. above nature or matter ~~which cannot~~ and the Powers thereof which only can be Deity Since we know of nothing besides — matter and its properties in the world besides this — Supream Being who adjusted all the parts of this, ~~no~~ fabrick by weight and measure

A Body moving in its motion

Every motive force (as all other Quantity) may be supose divided into parts (the sum of all which must be ~~supose~~ equal to the motive force first proposed, and an Impressed force is not at all permanent in the Body moved, but consists in the meer action, and its Efficacy is spent that very ~~non~~ moment it is Impress it is evident therefore that the — preservation of a Body in motion, is neither owing to the motive force, nor to the Body moved. But to some Power distinct from matter and its Essential properties i:e: To God the

If any Man hath, by talk, put such a notion into his Head, he may, perhaps, believe it: But if he hath never examined it, his knowledge of it will be no perfecter, than his, who having been told that the three Angles of a Triangle are equal to two right ones takes it upon trust, without examining the Demonstration, and may yield his assent as to a probable opinion, but hath no knowledge of the Truth of it: which yet his faculties, if carefully employ'd, were able to make clear to him.

Creator of the Heavens and Earth and Sole Governor of (123)
nature and her Productions

Supose a Creation betwixt motion time and place

---

(40) In the Consideration of motion these things are to be considered.

1 Quantity 2 Quality 3 power

By the Quantity of motion I understand the force or so much Power in the Pulse of Light to move the whole medium of an extent equal to the pulse given throughout to its utmost extent to which Medium if a larger extent were suposed added and the pulse or force of Light not also augmented I supose there then would be no Light pro-duced for if Light be motion the first augmented and the second not then consequently cessation of motion must follow the one being too extensive as not equal to the others power

Then will follow there must be a certain Space which we call a dense medium beyond which a yielding Body and not a dense Body as light is but a fluid as air or a vacuum but it is not to our purpose to enquire what is beyond this Universe which tho' limited is an extent more than sufficient for our capacities to range in

Thus light seems to be nothing else but an internall motion of a Transparent first begun or impos'd by the lumi-nous Body, upon the parts or Surface of the uniform or dia-miterly through that Medium to the utmost extent or limit thereof now tho' Mr Hobs to save a local motion would have it nothing but a Conatus ad motum and not a real motion and Descartes would have it a propention to motion and not a motion; but whether the one or the other means if it be not an actual motion I confess I am Ignorant

Yet thus far let me suppose that this Conatus, propension or impression on the medium to be something momentary, an actual local motion done in time

Plato establishes this Incontestable Maxim that whatsoever is good is Beautiful; and that goodness consists in proportion and measure and from just proportion spring beauty, Health, and virtue; as deformity, disease, and vices, are produced by the contrary:

First Principles infused by Education sways very much our tender years either to virtue or vice but the Gods have given Men the liberty of choosing good and evil and that all virtuous and vicious actions at some certain time are purely voluntary (notwithstanding Aristotles allegations against Plato) yet it was as usual by Plato's opinion (by examining him throughout) that God had given to Men all that Light that is necessary to direct them to obey the Law of nature which he has engraved in their Hearts, and to Inform them of certain fundamental Truths which enlighten the universe like so many Torches; but Men have despised these helps and by their voluntary contempt, are justly fallen into blindness which hinders them from distinguishing Truth from Error or at least from obeying it being led away by giving into the pride and lubricity of their hearts which could not bear controle but overleapt ~~their~~ the bounds of order to reach the ~~false doctrines~~ of false liberty, even when they had it once in their choise to have gone the contrary viz the way that leads to virtue ~~by Imitating~~ order Ceremony and Love by Imitating by a true copy from the perfect Idea's of the Immortal Gods but by giving way to disorder of —

Heterogeneal

Heterogenial doctrine they naturally fall in with the Tity and the Typhoas which lead them in the road to reduce things to their Principle Chaos of utter Darkness disorder or Confusion

The footsteps of Antient truth Plato explained in a mysterious and Poeticall manner to conceal them only that he might theme draw a doctrine and lay down rules to regulate a manner how to make it conceivable to the mind of those who would seek for truth how his mind affected to the thoughts of God the Creator of thon and the Universe in a time when it was dangerous to explain any thing Counter to the Doctrine of those Dark times, and sit down safe exposing such enigmatical Learning that the thinking enquiring world (those that desired to be righteous and saved by order harmony and Love might see he was not Ignorant of Antient Truth but willing to hand it down to posterity the safest way even to himself the publisher and to futurity that they might unprevented be the receivours wherein he hath explained by an harmonious Homogenial scheme consonant to his divine discourse, conceivable rationally to the mind of man that the Great God hath erected human mind primitively that is when divinely regulated after his own Image that is after his own Ideas but when become minor or subservant to the Body or matter then the ill compounded soul of Man derogates from its primitive beauty and by its fall from truth lies liable to put on indifferently any form proportionably to the degree distant from the Highest beauty even to the utmost deformity and disorder of the Tiphonian Race all which changes the more they incline to Earthly forms or Ideas he may be properly be said to degenerate into beasts, reptiles or fishes proportionable to the degree of the Heterogenial form he resembles most

Since from just proportion is sprung beauty, Harmo
health

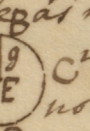
Health and virtue that is love and unity and from unjust proportion produced deformity, discord, diseases, and vice that is discord and duality according to Plato that we may be understood we must first consider under what Caractar Plato decypher deciphered his divine thoughts to be secure from the Age, that then run riot in disorder but had power to punish any one that dared to censure: In the first place Heiroglifick was the then Caractar of great part of the known world by which they deciphered their Ideas to one and other as the Aegyptians or which Plato was not Ignorant of but he Intending to present his Ideas to posterity was obliged to invent a Caractar of his own different to the times which was figuratively by birds, beasts, and fish; vizt by Lines, and by a learned and well studied proceß in Geometry to cause them to be difficult to be unfolded by any of that present Age excepting the truly learned expositors thus he set safe from all that he published to Mankind the doctrine of his Master Socrates for which the blindneß and Rage of the People sacrificed the great Master

To decipher Plato's Enigmatical learning we have two things given, vizt Love and unity, discord and duality, and Lines are the Caracters to find out different Lines each proper for its Topick. First As to Love and unity secondly to discord and Duality in reference to Lines to keep true harmony requisite thereto a form must be found out requisite consonant to the attributes of two opposite Lines each to the other as A to as to blend the two together harmonically through all the different points of division by motion, even through the infinite series of Corecting two opposite points in an Harmonicall proceß of Infinity to which there is requisite, a point, a line of two sorts viz a Curve, a strait and by a cooperation of these two by motion a third may be generated inclining or declining either to or from, each other according to position as a medial compounded of both the contraries in nature in order to do which Let us c i

combining these two ~~contrary~~ motions together
viz the Diurnal rotation of the Earth with the
annual Revolution of the Sun

Compacts

consider the attributes of each of the two opposites viz. a Circle and a strait line first the Circle in reference to motion may be a symbol of Infinity as revolving in itself without Termination or beginning of motion ever the same ~~as to motion or position~~ secondly the strait motion ~~with~~ Termination ~~of any~~ be ~~given~~ and ending which two are never the same tho' involved with the same motion in the Circle because the end is rest as to position and the other as unity, motion by changing of position or place resembles divisibility or multitude as more than one thus A B C is a Circle or Line tho' curved in its position it changes not its place in respect to its line having no note of distinction, either of beginning or ending but the line B E which is the Radius of the Circle A B C D suppose I say the Radius be fastned to the Circle at the point E and the Circle to move the point B to the point C yet the point E keeps still its same position and may be said to be at rest tho' the end B move to C to D to A and to B again so that the end B has motion equal to the Circle which if we reckon as Infinite motion then the end B has the like motion = thereto and the point its oposite called rest and supose a point as q in any part of the Radius between BE still any point therein will be in motion to any Circle struck on the same Center equally, Infinite thereto wherefore the radius of any Circle we will make the symbolick line of Body or matter as being ~~matter~~ minor to the Including Circle but as Body — contains space and no space can be comprehended by a single line and the fewest is 3 or 4 and since



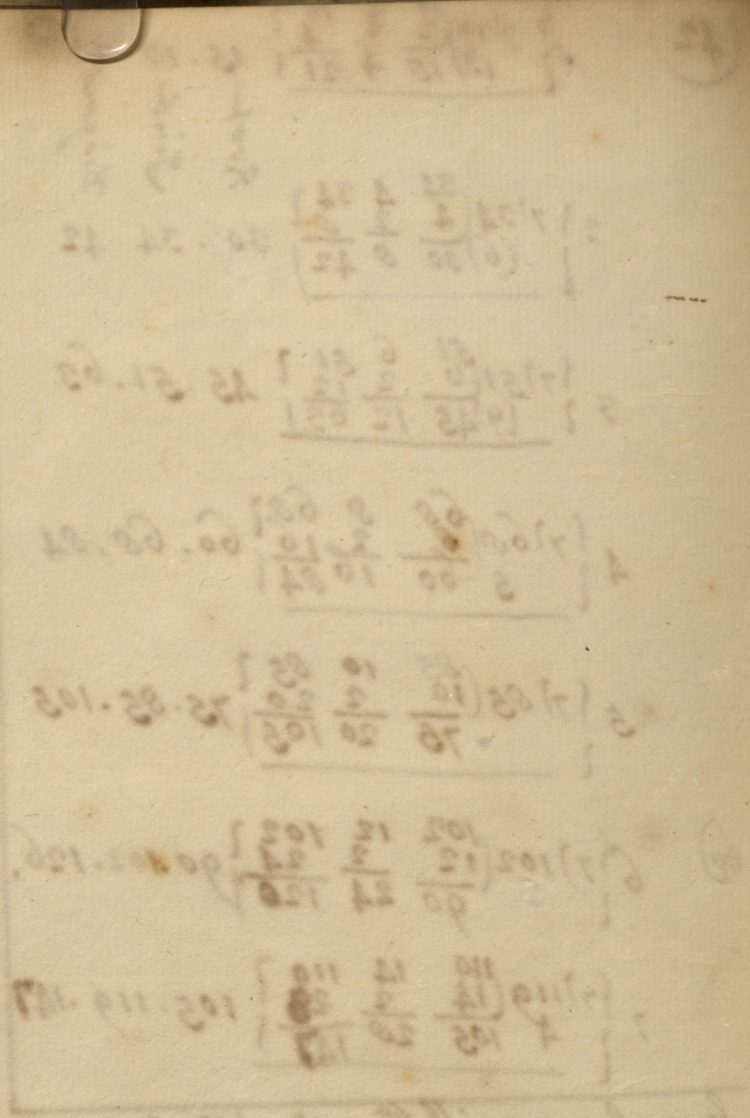


See 2 the other side the Book
See 43.45.50.53.68.73.103.109.152

1	7)17 (3)	17/2 / 15	2/2 / 4	17/4 / 21	15 . 17 . 21
2	7)34 (6)	34/4 / 30	4/2 / 8	34/8 / 42	30 . 34 . 42
3	7)51 (9)	51/6 / 45	6/2 / 12	51/12 / 63	45 . 51 . 63
4	7)68 5	68/8 / 60	8/2 / 16	68/16 / 84	60 . 68 . 84
5	7)85	85/10 / 75	10/2 / 20	85/20 / 105	75 . 85 . 105
6	7)102	102/12 / 90	12/2 / 24	102/24 / 126	90 . 102 . 126
7	7)119 4	119/14 / 105	14/2 / 28	119/28 / 147	105 . 119 . 147

Root Side Diagonal

This Table sheweth the lowest number that the limb of the Quadrant can be taken in aliquot parts as a common measure or number that shall divide the Quarter part of the Circle (or limb of the Quadrant) together with the Diameter of the same Circle, (or what is the same thing) or the Hypothenens of the Included Square without a remainder, The Scale beginning with number 17 at number one Now you must know no number less then 17 (as an Integer) can be taken for the limb of the Quadrant which will Tally or be analogous with the side of the Square (or the Root) and its Diagonal for 15 . 17 . 21 are odd number the first is the Root, the second is the limb of the Quadrant the third is the Diagonall all three odd numbers which cannot be divided but they may be doubled trebled quadrupled &c which you see I have done even till it mounted to 105 or and each number so doubled trebled &c is divided by 7 (and the method how is as follows) viz That here 17 as the limb of the Quadrant is the Curve line given to find



out the side of the Included Square which is here the root and the Circles Diameter which is the Squares Diagonall wherefore here is no surd in the Case but a Comon measure or number given which shall divide the one and the other without a remainder and perfectly to be demonstrated as follows

---

43 How easy it is to do mischief how difficultly to do good. The first requires no more, than what the world too frequently abounds with that is a Slanderous, invidious tongue, in a seeming friends whisper, a gentle breathing lie, with a specious pretence of Secrecy, not to let it goe any farther; the divulger knowing all the same time whilst it passeth, as a whisper from one friend to another, it gathers strength and takes so deep a rooted unto fourth many branches that when it becomes publick, and slips from every mouth having been set multitudinous ways about. the Universality of the talke makes it pass for truth whilst the injured person is the last that hears of it, so lost the power to check it in the bud and only sets himself down in silence pacified only in his own breast, as knowing himself innocent

The second.

(44) The propagation of Light the action of a Body

Not the action of a spirit but a Body, and subjected to the same Laws that other corporeal actions or motions are subjected to, subject to the laws of Quantity, fit for Geometrical exercitation, since that its power & action is always proportionable to its expantion; now this expantion in a free pellucid Medium is in a duplicate proportion to the distance it acts reciprocally taken

Light propagated in Straight lines

every way from the radiating Lucid point through a uniform pellucid medium, is the Judgment and consent of both Antient and modern Authors, whether they supposed it a flame or flux of Atoms or &c excepting some few who supposed only Physically such viz that the whole made a strait line tho the Imperceptable parts might be bended by the position of the pores or the form of the constituant parts of the Pellucid Medium

The Body that gives the Light viz the Sun is moved contrary to the laws of corporeal Bodyes as strait lines e

The Sun is moved by Supernatural Power in a Curve line whilst all its naturall effects of heat going along with it moves in strait lines either by pulsation or attraction either from or to the Body radiating from whence we gather a Curve and strait lines are the two only forms given of motion the Curve is the agent the strait the Patient all other motions are compounded of these two cooperating together

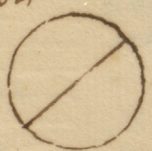
The Curve

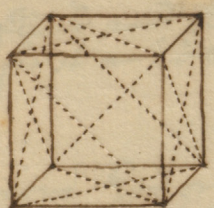
Is a simple Line perfectly in all its parts a like no contradistinguishing point in it self and ever the same without beginning or ending the Symbol Emblem of Eternity called by Plato the SAME

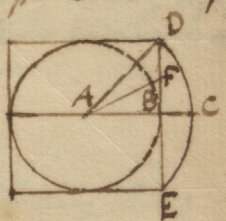
A Sphere in motion

is a pure simple Body containing Space under one Surface Homogenial in it self and is the properest Symbol of Ens or unity of divine form as being one body containing Space equal thereunto whose diameter is double to its radius and to what 2 points of the Periphery so ever drawn will ever be of the same length or Distance

A Cube is a Compound Body under six Surfaces sides or Planes Hetrogenial in it self 24 angles on all its Surfaces together and its Distance is from the Center thereof in an Infinite Capacity having between the major and the minor an Intervale or difference capable of division





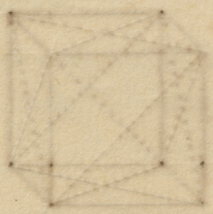


now the Radius AB is the minor distance of the square from the Center and AD or AC is the major distance from the Center and if the Radius AD should sink along the line DB to any point thereof as supose to att F than AF is visibly shorter than AD but longer than AB so wheresoever the radius AB shall terminate in the line the Radius will be longer than the side DB only excepting when it coincides with the line AC or AB

A Sphere

Is the Symbol of a whole or unity or Ens of divine form ever the same







the same Homogeneal to itself or center Plato's form of Entity which reduced by sight through a pellucid transparent Body or medium duely placed will be a Circle thereon if that is upon a plain ~~or~~ or Diaphanous pellucid Medium or in rectitude to the sight of the Eye placed it will appear a perfect Circle either as big or less according to its distance from the pellucid Body

Light one of the Principle Powers of the great system of the world — By which the whole is united and made one and every one part of that inconceivably great existance of material Beings is affected by every other which thence may properly be called one Body or the only material or Corporeal Being distinct from which no other Corporeal Being is — This in the History of the Creation is comprehended under the double name of Heaven and Earth as one material Being under two Heads namely fluid and solid matter of which Light was the first active power

The Efficient cause of Light what — A priori God or Spirit if any thing may be called the Anima Mundi: the action of Light is so near akin to that of Spirit that the whole fluid or Plenum of matter being in an Instant from any point affected and acted by it as of Light it may be said to be tota in toto & tota in qualibet parte

Things new are looked on as Heterodox to the opin(135
:ons in vogue and therefore what I now broach may meet
with a Check proportional to Errors Imbibed by length
of time and the bulk of Authority of the Authors

If the Grounds of this my Invention is too plain and
obvious as many others have been when discoverd and
explained if that shall become the cause it may be slighted
and neglected or not taken notice of Methinks it is to
the Comon good a misbecoming prejudicial Pride so—
qualified to assist mankind voluntarily to run in
opposition and not to allow Truth when where how and
by whomsoever found out or accidentally meets with it
* Who will condemn my method because I am not of an
equal stature with them? Tis true Great Genius's who
soar higher even above the reach of Inferiour minds
neglecting the low and plain paths which for safety
such as we delight to walk in They may think they
want no clue of thread to lead them in and out to and from
their Intricate Labyrinths which they themselves have
made there would even prosper for the likerati have
even groveld even those Giants of the Earth
er But if such there are * who will condemn my
method because I am not of an equal stature with them

I say if this shall be the case I after the publica
:tion and such who are of my size must be contented
with our lot and undisturbed enjoy the truth while
their superbe flights through mists of learning
surmounting the meaneps of our thought to such a
Height as to loose sight of us poor well meaning
Mortals and all that lies beneath Sure it can not be
is Althea less Althea in Constancy when in a plain
but Innocent and Virgin dress because they Protect
like

like are never changing their rich apparell which glares so much even in their own Eyes they cannot know the riches nor find the thing they aim at they mounting to an extravagant Height is too much Light become like the Bird of Athens Blind and think they only see truely in the dark that is in the Night or rests of their own making

When in superbe mazes they've lost their way
Then in Eternal Night they seek the Day

(46) Forms are nothing else but certain motions of lines or placeing of points & lines proceeding from the appearance of an whole object either to the power of the sight or extention of the Medium or Object seen through or on a diaphanous medium or plain Now this appearance is threefold either direct, Obligue, or compounde and from these three there arise three forms to sight for sometimes we follow direct appearance we consider good and evil under the view shew of that which is

Now the appearances of things are three fold

Sensitive the form of the Object in esse or the Geometrical form

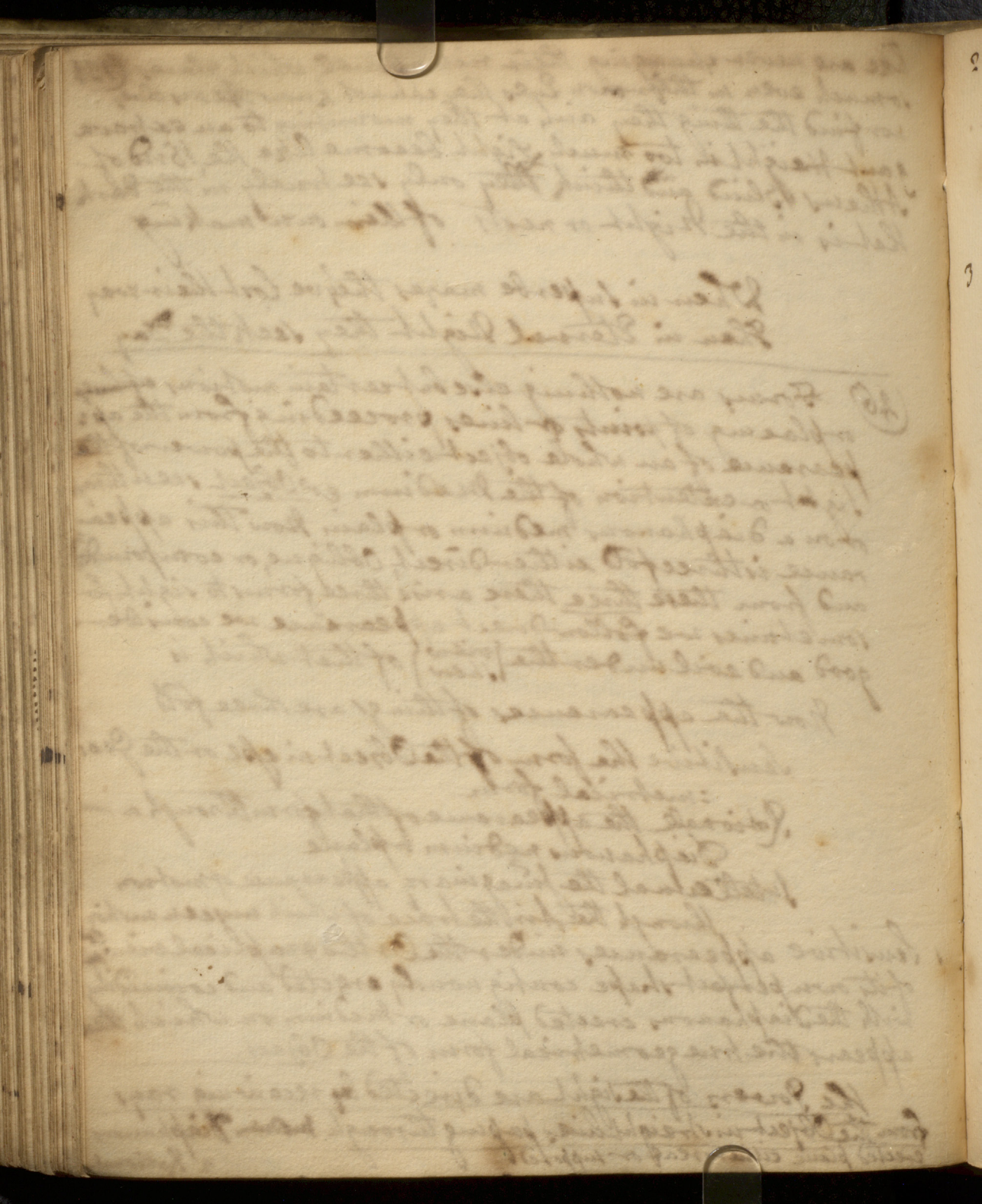
Rationale the appearance of that form through a Diaphanous medium or plane

Intellectual the Imaginary appearance of motion through the Air the trace of which unseen motion

Sensitive appearances under the Orthographical view of its own perfect shape contiguously erected and coinciding with the Diaphanous erected plane or Medium on which they appear the true geometrical form of the Object

The Powers of the sight are directed by receiving rays from the Object in streight lines passing through medium Diaphanous erected plane either real or supposed

2 Rational



2 Rational is the strait rays of Light reflecting from every point on the Object by streight lines transmitted through the plane or Diaphanous medium to the Eye and so to the retina which communicates it to the Brain where the soul takes cognizance of it according to the true appearance thereof

3 Intellectual sometimes we embrace imagined appearances regarding such forms of Objects or their motions as our sense of seeing (the Eye) hath formerly shewn us. for Instance the form of Circular Triangular square motion of a Body passing through the Air where no trace is found but may be by the Intellect conceived

---

What is Truth

Truth is, (what it is) I think that which never deviates from itself any ways misguiding of the senses either in the sensitive, rational, and Intellectual and from these three arise three different appearances of Objects to the sense of seeing which is the subject I design to treat of The first is the Object seen Optically That is in the open Air the real medium or through a posited diaphanous plane or supposed medium

see pa: 156

A Body seen leaves an Idea of its magnitude informa:
cording to the medium seen through either true or false stated
also a moved Body likewise leaves an Idea of its motion name
:ly an Idea of that Body passing out of one space into ano:
ther by continual succession which agreeing with the comon
opinion of Aristotles definition which we may call TIME but that
that also according to the right placing of the medium our
Ideas succeed to truth or sinks into Error thus our concep:
tions to the nicety of forms in general especially concer:
:ning motion differ: tho' truth is eternally the same

The motions of Heaven and the Earth with their mag
:nitudes which we divide into parts and measure the
motions thereof yet differ according to the degree of an
unjust ill placed medium

External things as Bodies and its various species have
a real being and existance in the three properties of
length Breadth and depth geometrically filling an
adequat imaginary Space but the appearance of that
Body or Space varies in form proportional to the distance
of the medium through which the Eye beholds it for
Body and the Space it takes up being coincident
have equal forms in esse without us but the appearan
:ces of those forms varies in some respect according
to the just or unjust conveyance by which they are
brought to the senses where they depend upon the in:
ternal power of the mind creating proper Ideas
or forms thereof

These Internal Ideas forms of externall
things ought to be well understood weighed and ranged

into Me

into a method to find by their magnitude situation motion and parts to have proper names and means to substract from and compound them with one another according to a readyer and more easy thought of a well ordered mind; for we compute nothing but our own Ideas. For the magnitude distance and motions of Heaven and Earth we measure them in our Closets as out of reach or in the dark mentally and we give in the account accordingly as we sett out either to the right Hand or the left and in the first manner we will endeavour now to consider them.

Space in respect of one only created universe is an Idea we may have of the Boundary that inwraps that universe of Materiality coincident therewith which makes v:g: supose removed the adequate space would remain equal in form by being coincident to the whole in which various may all Bodies in general take up their places in different forms according to their extention not that I think space to be the extention of Bodyes and that they may be innumerated infinitely but I meanby space even that coincident space that the universe took up when it was created including all natural things beyond which I have no Idea.

Body may be mentally divided and so may space or time i: e: one space is called part of another space one time part of another time when this contains that and something besides hence nothing can be rightly called a part but that which is compared with something that contains it as a whole

Therefore to make parts or to part or divide space time or surface as a plane or form made of their representative

:representative a streight line is nothing else than to supose
your mark to be a Mathematical point void of quantity as a
term where motion of a visable point shall have run through
equal to the part of the form, space, or line you propose to di:
:vide and when divided if on a streight line you will find
the terms more by one than the Interstices on a streight
line because the streight line is limited by two extreams
as a line extended to the utmost having two extream
points which two extreams if supposed to meet become
but one so that the two extreams are the same as one
when bent to meet as a Circle whose terms and Inters:
:ces if divided are equal in number being an unlimited
uniform so is any plane form of Body as a square but in
the streight line the terms of Division are more by one
than the Interstices because the two extreams are
named twice when in reality they two make but one
when they are to act in unity

When space or time is considerd among other
spaces or times it is said to be One namely One
of them nominated which number together
make the whole

So that One simply is that which is undivided but
when supposed to be by terms divided each part then assume
the name of One part of the whole so is each part called
one of those parts division but takes a different name
proper to its position as of plane successive 1 2 3 4 5 6 7 8 9 0
and when a thing is divided the parts are only so many
as the Division makes them

a Body

is the Exemplar form of Duality

A Body and the magnitude and the place thereof are
Divided by one and the same act of the mind for to divide
an extended Body, and the extention thereof and the
Idea of that extention which is place (or else which
is the Exemplar of place) is the something will dividing
any one of them because they are coincident and it
cannot be done but by the mind that is by the division of
Space

Motion is a continual relinquishing one place
and acquiring another and that place which is relin-
:quished is commonly called the Terminus à quo as
that which is acquired is called the terminus ad quem.
I say a continual relinquishing, because no Body
how little soever, can totally at once goe out of it-
former place into another, so, but that some part of it
will be in a part of place which is comon to
both, namely, to the relinquished and the acquired
places thus continual motion is generated

Motion

(140

As it is the principal part in our lineal universe to which space and time are relatives in and through which three, substance matter or Body makes all their different forms and creates such Ideas in our minds capable to give the picture in words or draughts intelligible even unto another the conceptions of every thought as we ourselves accept them marks or characters by which we decypher our Ideas by

Time is as I conceive it

as a relative to motion, only a duration of motion through an equal space of a Body or substance tracing the mover through all its trale or range as through or on a transparent Medium, plane, or erected Diaphanous duely placed as such either real or supposed erected perpendicular when duely placed a priori or secondarily or viz obliquely more or less to an Eye or radiating point stated or moving perpendicularly proportionally thereon equal from the point that substance starts from in motion on to the other extream point where substance enters into rest again, the first and last period on the said plane containes what I call time equal to motion given on the erected, diaphane, plane, or medium, perpendicular or oblique &c.

Space in respect to Motion and rest the other relative

Tis an Interstice between the Comencement of Substance or a remarkable term or point to motion. it being

it being the first term and the other extream viz when substance ceaseth and enters into rest again the first and last period contains what I call Space equal to motion or substance

An Idea I conceive to be

A Charater as words to the Intellect a form abstracted from matter, or as colours and lines are the outward appearance or termination of substance, or Body to the Eye (the nearest and surest Intelligence to the mind) so draught or picture of the termination of things I think gives the perfectest forms or Ideas to our conceptions, permanent and true, the purest records lodged therein and capable to be produced as Intelligible declarations of our mind to others the easiest and most demonstrative way to Truth

A line { Curved } is the Longest
{ Strait } is the shortest

A strait line

has the surface without depth an Imaginary line (or as some say hath length without Breadth) when orthographically placed and as it inclines from the Orthography to the Ichnography it grows more and more into a point and is such in the profile (when Ichnographically seen in its minutest degree) viz when the Horizon line and the base line meet or coincide together it appears than a meer point but when the Horizon and base line seperate to the utmost degree of distance then tho' the orthographicall face of a line be a point only yet the

the Ichnography shews the line half its primitive length according
to a due distance proper to the true laws of Perspective as I intend
to demonstrate that is according to the Height and distance of
the Eye A Circle the only line single capable of including
space as surface as when Orthographically placed it is a plane
surface with equal length and Breadth without thickness
but as it inclines to the Ichnographical position it approa:
ches by generation into a strait line in appearance to the
Eye or radiating point sinking so low as to the Base
as I am going to demonstrate

The maximum

is I call the appearance of Body in motion when orthogra-
phically placed to its greatest extent of Height and
distance att any one moment of its appearance occasioned
by its disunity of form or so I call space or Interval that
Body has moved in its largest extent comparative to
its minutest as shall be demonstrated

Body

Body or substance hath form curved, strait, or mixt,
and infinite may the medials be in nature but we
have occasion but for three as guides first the
curved viz! a Circle or Sphere Secondly the right —
angled or erected perpendicular viz a Square, or
Cube, Thirdly the equally oblique or equilateral
triangle or Cone for nes in motion can be traced
most truly only by these three figures deviating
the one from the other from a point or Eye directed
or seeing therefore these three will account for
all others

all others whatsoever be they Pentagond Sexagone &c or any Polygone that may be

Surface of Body

Each whole intire surface hath Length and Breadth without thickness which is a compleat form or equal demention of Body as to Maximum and Min: of Motion (the two extreams of Bodily extention between which the mean is always included and generated on the medial plain by the mutual action or operation between them the two extreams viz the object moving and the Eye posited cutting the Diaphane medium by radial lines in points and Legons to them both

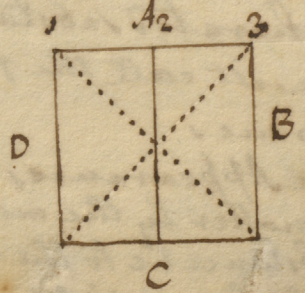
a mean {Appearance / position}

to explain which

We conceive a mean Appearance to be an appearance of a visible mark as a point or object on the surface of a Body comencing motion (as the first extream) and tracing its progress through all the Infinite series of to the other extream (of rest) viz: the whole intire motion and all this appearance to be traced on the surface of an exact ed diaphanous or plane by an Eye att a proper distance taking in the whole meaning att the aggregate of points this we call a mean generated between two extreams (Plato called it a generated substance) which for distinction we will call the form of formes

formes

I conceive are the Appearances of real things as substance, Body or matter by the motion of Light reflecting from Body, substance &c to the Eye receiving the Pulsation according to the Law of Light, viz the Angle of Incidence


1
A2
3
D
B
C

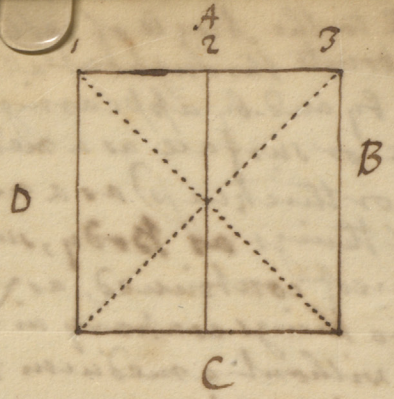
Incidence is equall to the Angle of reflection as from the Aggregate of all the points throughout all Bodily Surface I shall demonstrate by and by appearing on a diaphanous or erected plane or surface as a medium rather I imagine than of substance or thickness as a medium to receive the Termination of things as Body, substance the whole or each point thereof continued, as Lines be for as was hinted before, two things contrary in nature cannot be blended together without a medium to unite them

A Medium

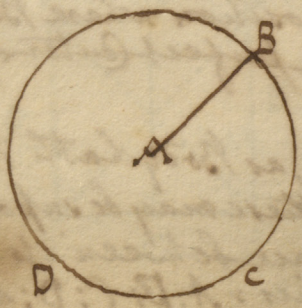
I mean by it an erected Plain of what form soever as to its ~~off~~ periffery, Limits or Terminations or lines suppose the Surface of a solid as A formed in the mind of transparent Air without thickness for thickness has two surfaces and consequently will require the Laws of refraction to account for the distance of their Surfaces thro all the Infinite Series of Obliquity and will give Error in Breaking the rays of Light or vision the surest guide to truth but through a supposed medium of Air their will be no deceipt of fraction in breaking or curving strait lines it being contrary to the Laws of nature

Rest I conceive two ways in the difference of the two extream points as the Line or Radius of the Circle the one end is a meer point of position where Body is stated as in rest as the Immoveable perfect Center of the sphere, or Body in motion

Body stated in Rest, as Body hath Breadth Length and thickness and each of these may be supposed to have a surface and surface hath space between its extreams as the Square hath four lines: A. B. C. D: and the Center is where the Diago:


1
A
2
3
B
D
C


A
B
D
C


B
A
D
C

the Diagonals pricked meet and it is to be observed that the Center in respect to any of the four corners is distant to a double ratio viz: in a maximum ~~degree~~ and in a minimum degree for from the Center to 1 or 3 is the longest ~~dgree~~ distance and from the Center to 2 is a mean between both and the nearest extream or minimum also which is to be heedfully regarded on which depends great consequences to the introduction of Truth the square figure is therefore by Plato called Dualliy or the other because not always the same in respect of motion as the Circle to it self

2 Body situated in motion, as a Body it hath Breadth length and depth and each of these may be so posited as to make a plain or surface to the Eye seeing and a surface hath space between the two extreams as the Circle hath one line A.B.C: and the Center is where the two pricked lines intersect and as it is to be observed that the Center in respect to the Periffery is distant in a single Ratio viz: his Equidistant and ever the same space what:soever You draw the line to the Periffery where there is no contradistinction of first and last or mean between but the maximum and minimum and mean are blended into one v: B: property compounded of motion and rest viz: as underneath

A Circle is what Plato called unity or the same observe the radius of the Circle from the Center A to B: suppose that line to move from B to C D till it comes to B again the point B is the point in motion viz: local motion the point A is the point in rest stated motion the consequently B being both the beginning and end or the outward extream

extream of the utmost motion as to figure we will call a Circle the proper guide of Infinite motion, indefinitely beginning on the Periphery of a circle and consequently indefinitely ending therein for what has any beginning has no beginning and such a beginning alike ending that is no ending nor difference or variation in respect of it self but is ever the same eternally in all its process Motion ett B being the utmost extent may be termed the max: of motion on the Periferey including in it self the min: or centers of rest :A: on which line AB is contained all the infinite series of Degrees to and from Infinite motion to perfect rest which is a point void of any other attribute but only direction from its supposed self in order to any point on the surface of a Circle or Sphere which tho' whirling on its own center (if a circle) or on its own axis (if a sphere) is not improperly said to be at rest :i:e: still in the same point or axis of position not changing place the truest Emblem of Motion internal or exteri: nal, or of rest extream, both major or minor if I may have leave to write paradoxes which may be demonstrated

Rest

Rest
motion
form
Circle
Square
Triangle Equilateral
Idea
Orthography
Ichnography
Schenography
profile
parallel
Radial
Diameter
Eye — line, point in the Horizon
Distance { line / point } in the Horizon
Accidental eye or distant point in the Horizon

a point { in Circular motion, equally the same in respect of it self or any other approximate Body / at rest — }

a line { Circular / Strait } { max / min: } { medial or oblique

{ Orthographical / Ichnographical } { parallel { to the Base / Radial } / Profile { Perpendicular to the Base or Radii

a line { Circular / Strait } { max / min: } { Orthographical / Ichnographical

a line { direct Circular / Strait — } { max / min: / max / min } { Orthographical / Schenographical / Orthographical / Ichnographical

line direct Circular in the right { max / min: } { Schenographical / Chenographical

2 the Definition of Philosophy explained, 3 Ratiocination of the mind, 4 Propesies what they are, 5 how properties are known by Generation or contrarily the scope of Philosophy

Philosophy ——— 1
Names. ——— 2
Proposition ——— 3
Syllogysme ——— 4
Of Errors, falsity, & Captions ——— 5, 6
Method ——— 7
Place and time ——— 8
Of Body and Accident ——— 9
Cause and Effect ——— 10
Power and Act ——— 11
of Identity and difference ——— 12
of Quantity ——— 13
Analogism or the same proportion ——— 14
of Straight crooked Angle & figure ——— 15
Motion ——— 15
Simple Motion ——— 16
Compound motion ——— 17
Figure compleat ——— 18
Figure defficient ——— 19
Of the Equation straight lines with crooked lines ——— 20
of Angles of Incidence & Reflection equal 21
Of the Dimension of a circle & the Division or intersection of an Angle 22
of Different Motions ——— 23
Of Refraction & Reflection. 24

a, to

Would you be a Philosopher consider Man as a microcosme of the Universe: so let Reason which is the guide to man move upon the deep of your own cogitations, and experience, darkness therein must be cleared up and things which lie in confusion must be set asunder, distinguished and stampt with their own name, in order like to the creation which was first light in the Sun distinguishing day from Night duely planted or situated in the Universe with its Agents or secondary Illuminations as the moon and Stars & thus order must be deduced from the disorder and confusion in the Chaos of matter which cogitations may have taken in by undigested Ideas of universal motion, Bodies, forms, time, space and place

In the first place I set down the light of reason which can conceive the expantion of universal space, secondly I divide it therein by bodies or motion, thirdly I explain what I mean by motion, Body, form, time and Space

Light of Reason

Our senses guide us that what they perceive as Body, motion, &c we know that is, and we have an Idea thereof that, it is, and this perception the Greeks call ὅτι, what, so universal space, or all containing space, equal to which we may Imagine motion, Body, form, and place, as for example the Sun placed in the midle of universal space, influencing throughout as a power or Body moving and dividing it into spaces, time, or parts perceptable to sense this we call the ὅτι or what is; but the manner how we want to know by examining the cause how and this we call the διότι or the manner how which I'll endeavour to explain thus

All natural power is dependant on supernatural power, as the primum mobile (and to do as we ought) we must and can attribute both to none but God an Omnipotent Being above our reach to comprehend, He only can be the efficient cause of

As to motion The'ore we can perceive in Universal Space and motion by the Sun placed therein, as Body moving and dividing it into time and Space perceptable to sense that is, but how we want to know by examining the diction which we endeavour thus All natural power as a Dependant on Supernatural power. To do as we ought we must and can attribute both to none but God, an Omnipotent Being, above our reach to be the only efficient cause of motion or Spirit, incomprehensible to us, but in so doing we may conclude that — God Includes as

to motion Spirit divine } in which consists } Life & Death } What is } Motion Eternal as the one extream
Body & naturall } & Rest the other extream

which together makes a Continuum of Motion Infinitely a Series of Gradation of Simple Motion from one extream to the other.

How to give a Symbol of such a Motion or to draw a Picture resembling it so as a Problem in Lines may make it Intelligible to another is surprizing Difficult but not Impossible as thus.

First it may be considered to consist in two Capacities viz^l divine Motion and natural Motion and the Symbols I shall take for them will be these a Circle for the first and a Strait line for the second and give my reason why and these two powers cooperating together are capable by Method to generate any form whatever.

My Reason why a circle is, because Motion any where begun therein finding no termination eternally goes on according to the Circle: — passage. — Secondly why a Strait line is because motion coming at either Extream and proceeding in coming to the other it ceaseth and so becometh a limited or Stated Motion equal to the Body it Stands a Symbol for and both cooperating make a Motion universal or infinite equal to Us which I take to be an entire compleat Operation of the whole without any Deficiency and therefore as to lines (which I intend to treat of one line being Inclusive) there is but one Including Space which is a Circle and another line perfectly contrary which is a Strait line therefore I have chose these two for my Symbols which by Modification I believe may be able to account for universal motion thus.

Since a Circle has any where to begin I choose the Maximum Circle, and the Zenaider line to begin there from that is

of Spirit or motion unconceivable to us but only by secondary causes but in thinking so we may conclude I hope without offence that

God { is the Efficient Cause / breathed on the face of the deep / created the Body natural } or { Spirit divine / Idea / Body of nature } { life / time / Death } { motion / Duration / Cessation / rest }

These two extreams, motion, and rest includes a natural continuum of motion to keep pace with Infinite or Circular viz a series of gradation in simple strate motion from the one extream to the other and the aggregate of these series makes a whole with this proviso that it can be made appear how finite motion can continue in durance with Infinite motion

Now to give a symbol of such a motion or to draw a picture resembling it so as a problem in lines may make it Intelligible to another tho' it may be surprizing difficult yet not Impossible as thus

First it may be considerd to consist of two capacities, viz divine motion and natural motion, and the symbols I shall take for them shall be these; a Circle for the first, and a strate line for the second and give my reasons why these two powers or to say better this one power (viz motion) with its attendant rest coeperating together are capable by method a priori in motion onward, Rest posteriori to generate any form whatever and compleat the operation of an whole

My reason why a Circle is the symbol of motion, because motion any where begun therein finding no Termination eternally goes on according to Cap page and is on all containing figure or form

Secondly why a strate line is the symbol of rest, is because motion comencing of either extream and proceeding on to the other, it there must cease and so become a limited or finite stated motion equal to the Body it stands a symbol for and both coeperating or to speak more properly blending together make a motion universal or intire through every Individual part equal to Us which I take to be an intire

is a Diameter so placed through the Center of a Maximum
Circle and C from the Nadir point a Tangent line be
drawn extended on both sides together equal to the Diameter
of itself be for a base: Then I say between the Maximum and
its Interiour Circle which the Zenaider and the above said
Tangent (which are perdicular to each other) are comon there
may an Oblique line be drawn from the extream of the Min-
imum tangent through the Apex or Zenith point of the
Interiour Circle so as to Intersect the Zenaider line in a
point so as to determine or bound the Dimensions of the leaper base
upon the Horizontal line of the Maximum Circle which I am to
Demonstrate thus— ☞ considered

intire compleat operation of the generated whole without
any deficiency or missing of parts and therefore as to lines which
I intend to treat of (the being inclusive) the Circle is the only one
capable to include length Breadth, or space in unity of motion
and the strait line is the Other as Plato calls it, perfectly contrary
Duality, stated in absolute rest as on the Axis of the Sphere in
motion, which is a supposed strate line, therefore I have chose
these two vizt a Circle and a strate for my Symbols which by a
due modification and position I believe I may be able to —
account for Universal Space

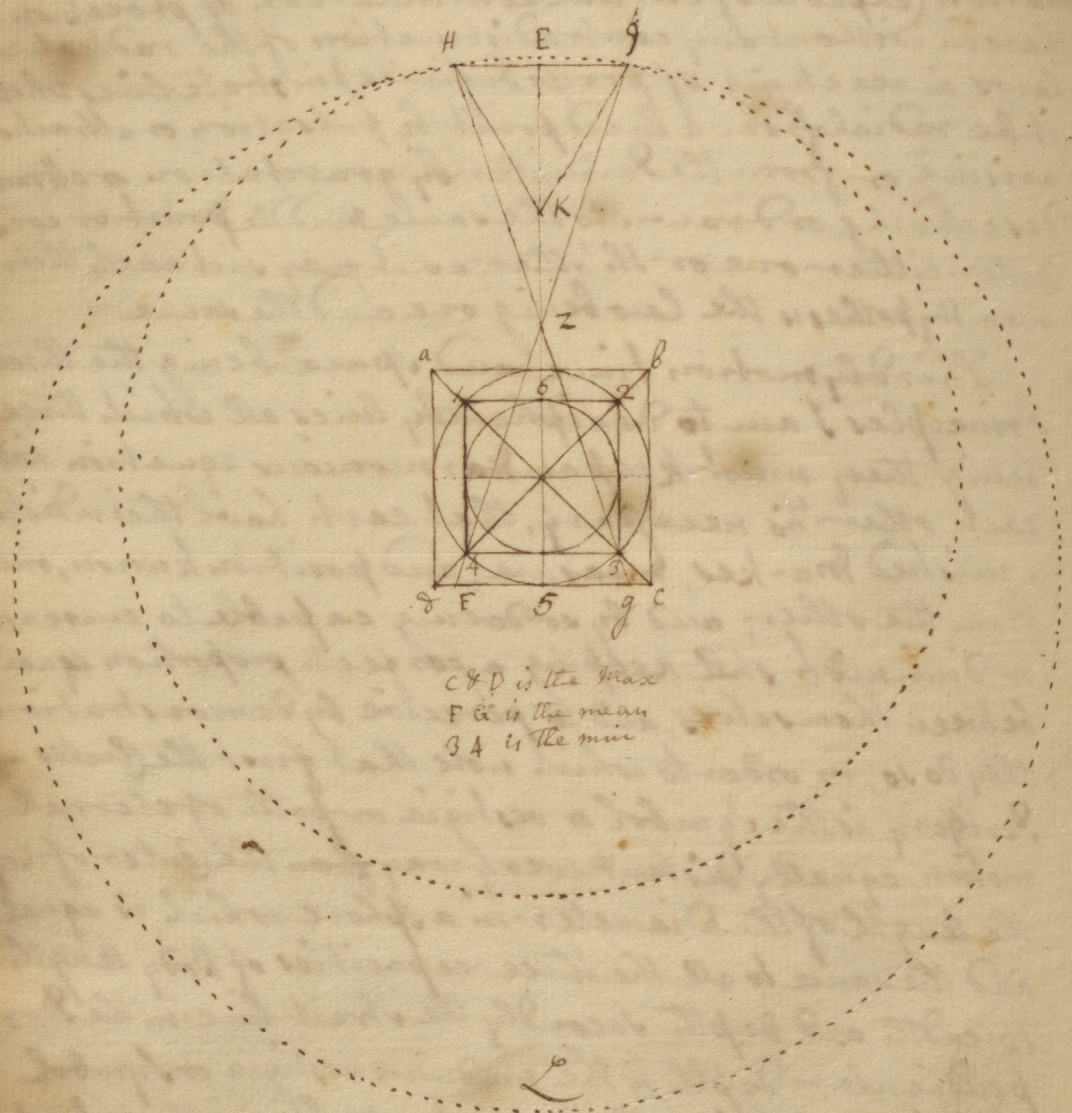
Motion is to be in the aforesaid two capacities viz Circular
and strait and that the Circle is only the Plane form or
mark with length and breadth ~~with~~ in plane without thickness
only the Circumference of Circle on a plane representing
the form of a Sphere thereon a meer non Entity in Substance
but a Sphere is a real Body including under one surface
real Space containing these three properties length Breadth
and depth which all Solid Bodies have; but this only contained
under unity of surface therefore I chose it for the Symbol of Eu
an all containing Being on which motion in a great Circle
thereon I call Infinite Circular motion the Duration of which
gives time capable of Eternall continuation therein —
without termination, or distinction of beginning or
ending in itself

Secondly a strait line as the Diameter a mear —
phantasme going through the Center equall to the great
=est extent of the same Sphere, therefore contained and equal
within the whole or Entity about which as an axis we
may supose the Center of this Axis, or what is the same
(if not better) the Center of the Sphere as a radiating —
point by continual pulses every way from thence
Issuing in strait lines all at once ponshing with
equal velocity in orbem, then his plane that each
or every

or every ray how far soever extended (supposeing them a perfect continuum of rays in orbem) must hit each and every their corespondent proportional or analogous points in the greater as well as the lesser orbs wheresoever. This I call Infinite direct motion capable of eternal continuation of procession therein without any contradistinction of the radeal laws in reaching of points Infinite in strate lines whether it be radial from a lucid point by pulsation or attraction arising or from the Perimiter by gravitation or attraction descending or drawn to the same middle point or common Center either one or th'other, as it may suit each their own Hypothesis the law being one and the same.

Thirdly motion time and Space being the three Principles I am to decipher by lines all which three being they must keep an Harmonious equation with each other 'tis necessary, that each have their distinguished Markes, measure, and position known, one from the other, and by so doeing capable to encrease or diminish still keeping a perfect proportion equal between themselves, and to perceive by demonstration they do so, in order to which note that first the Circle-Periffery is the Symbol or vestigia or path of eternall motion, equally distant every way from the Center of like the length of the Diameter in a Sphere which is equal and the same to all the three capacities of Body length Breadth and depth Secondly the strait line in the Perpendicular depth is the medium vestigia or Symbol of apparent time, the Base strate line is the extent or vestigia gone in Space these things are to be remembred

Their



C & D is the Max
F G is the mean
3 4 is the min

See 2 on the other side the Book
See 43.45.50.53.68.78.103.108.120

Their markes and measures being given, there will remain only their position, in respect of the containing maximum and the contained minimum they being extreames to each other in respect of bulk as position equally contrary as motion to rest: The maximum is known it being the surface of the containing sphere and its mark the Periphery of a Circle but the minimum must be sought for thus

+ To the Sphere or Circle you design for your maximum let there be a Tangent line drawn equal to the Diameter and make a square thereof then make upon the same Center an Inscribed Square as 1234 then take half of one side of the said Square and set it from 6 the top of the maximum Circle to Z then taking in your Compasses the length 5 Z and set on the Perpendicular from Z to E then take 5 9 in your Compasses and set it from E to H and 9 and take the length H I and set it to K which will make an Equilateral Triangle then taking the length E 5 and setting one foot of the Compasses in 5 strike the Circle H I L which let us suppose to be the Ecliptick line in which the Sun is ever supposed to be then consequently the point 5 will be the Center of the Universe on or through which the Earths axis turns as Perpendicular to the strate line 5 E then lett us suppose the point E to be aries one of the Suns Mundane Meridian points which he comes to once a year then Imagining the suns Body moving round this Circle marked H I L which let be the Ecliptick and his motion therein influencing whole nature in ranging matter infinite ways within its own Sphere of activity, to generate universal formes, each growing increasing, moving or rising to its maturity

maturity then gradually wasting perishing or falling into its primitive matter; Therefore I supose the Antient Philosophers did opine that the Sun was the Soul of the world for Thales defined the soul to be a nature moving always, or having motion of its self and Pythagoras said it was a number moving it self and this number he took for Intelligence or understanding

And Plato thought the moving Power was the Soul of the world instituted by Almighty God, as a Law to his Viegerent the Sun, how and in what form, where, and how his steps or degrees should trace out time as his rays might influence matter so as to generate universall species. These Philosophicall opinions seems to relish as if they had taken their sentiments from the Egyptians, for Moses saith in Genesis

1 In the beginning God created the Heavens and the Earth
2 and the Earth was without form, and void, and darkness was upon the face of the Deep and the Spirit of God moved upon the face of the waters
3 and God said let there be light and there was light
4 and God saw the light that it was good

---

† To give a general Scheme or Law or a universal Mode or form how celestial motion operates throughout its whole Inclosure on Matter, is very difficult to lay down, it having not as yet been made out what Principle, or how many would be requisite to perform so useful a problem which tho' hitherto thought difficult, if possible to be known

Yet I will attempt the Consideration, under three

three Heads represented by the table here annexed which set before you at one general view the substance and method of this first Chapter

Three Considerations of motion in its modes and means to generate universal forms on matter by three contradistinguished bodies and their formes (let it be admitted) — which is

1 Spherical — their formes are in plane — A Circle supernatural, and infinite procession, ever the same.

2 Conical — their formes are in plane — An Equilateral Triangle mixt mediator or mean Adjutor.

3 Cubical — their formes are in plane — A Square, Natural, finite increasing and perishing alternately, never the same but the Other. according to Plato

The Sphere

Is the first most exquisite and compleat Bodily form in nature of divine make, containing universal motion generating Bodies formes in nature most copiously extended in unity to humain Comprehension, under one simple surface and its forme in plaine is a Circle

The Cone

Is a Compound Bodily form betwixt the Sphere and Circle i: e: conected with a Conick Surface and a circular plane its form in plain under three Surfaces oblique to each other which make an Equilateral Triangle

The Cube

Is a Bodily form of six equal plane surfaces their parts parallel to each other containing length Breadth and depth twelve strait equal lines making eight equal Angles. its form in plane is a square with length and Bread without depth

The

The Circle or form of motion Celestial or divine
In which let us suppose a Body, mark or point, moving
round its Periphery which form having no beginning nor
ending can neber be a cause it should stop, or cease in one
place more than in another since the Circular Line is a
Continuum throughout the whole therefore let us suppose
it the form or Symbol of Infinite motion, Efficient cause
or Universal Agent.

Then such is the Body of the Sun moving round
in the Ecliptick influencing whole nature in rar-
:ying matter, infinite ways with in its own Sphere of
activity therein to generate universal formes, each
growing increasing or rising to its maturity, then
perishing wasting & falling into its primitive matter.
Therefore I suppose the antient Philosophers did opine
er (see two leaves backwards)

Thales was the first that defined the soul to be
a nature moving always or having motion of itself

Pythagoras saith, it is a certain number moveing
itself: and this number he taketh for Intelligence or
understanding.

Truth is that which never deviates from its First Principle as an inviolable law to itself either in mood or form ie: when the mind or senses are no ways misguided either in the sensitive rational and Intellectual nor is cheated by fond opinion perverted by false doctrine or distorted by a misplaced Medium for from these Error springs for the senses have but one universal plane law vizt of going the shortest way to effect what it goes about Thus

The Eye the sense of seeing (only I design here to treat of) hath but three different appearances of Object, answerable to the sensitive rational and Intellectual understanding the first is the Object seen Optically ie: with out considering any determined medium duly where placed certainly, or supposed, but only we have the sense and cognizance of seeing the Object through the prime medium the whole Intervening Body of Air through which the Object seen (as all objects) must be tho not stated of what bigness the Object is — thereby determinatively for the want of a Plane or Diaphanous medium erected at a due distance proper to declare the truth by placing thereon the form how the points are placed on the superficial line or lines to make out Truth, which if less it must be — proportionally analogous to the distance of the Object from the Plane

The second is rationally by a certain law or — method in streight lines collecting the reflecting rays of light from each points on the visible Surface of the Illuminated Object at their Intersecting points where they cut the erected diaphanous, medium or Plane rational and in proportion to the Surface of the Eye which receives them and by the same law of lines transmitting them faithfully to the retina from

communicates
from thence to the Brain where the soal takes cognizance
of them according to the true appearance thereof

Thirdly Intellectually because in many cases we are
necessitated to examine into Imagined appearances of
Objects in their forms of motion, which we know they must
have made tho not discoverable to the Eye; as for Instance
Circular motion of the Planets in appearance is a compound
ded motion between the Curve and the straight for they
are analogous in operating on one and other tho' not
discerned nor yet known but shall be demonstrates
in Chap: In the motion of the Sun moon and Planets
tho the Air no tract is found therein besides their periods
are not Instantaneously viewd if seen but are to be
temperaniously collected into one aggregated whole
form which shape may be by the Intellect conceived and
collected tho' never seen together or to make

A gradual Diversity

The greatest degree of Progressive motion is Infinite
in line of extention; but a Circle is the greatest degree
of progressive motion indefinite i:e: capable of farther
extention tho not extended but of Infinite progression there
in

Therefore a Circle shall have the greatest degree
of Infinite progressive motion that may be in a line
but a Circle is infinite progressive motion

Therefore a Circle
The most continued motion shall be in the most Infinite
line

But the Circular is the most continued motion
Therefore the Circle is the most continued infinite line
q:e:d

But if an Eye looks on the Sun from a tangent point on
the Earth the seeming motion of the Sun must be a compound
ded

=ded motion between the Earth and the Sun for whilst the Earth is making one Intire revolution on its own axis the Sun will be accomplishing one whole degree i.e: three hundred and sixty fifth part in progression on its own orbit of the Ecliptick

From whence we gather that the Suns own equal velocity or progression either makes the appearance to an Eye fixed on the tangent a larger or less Elips is in appearance according to the degree or sign the Sun happens to be in att the time of Observation and when the Elips is is the lowest the Suns velocity appears the swiftest e con: and when heighest it appears the slowest which may be proved Geometricaally Altho some may say the form may be Hyperbolical or Spheriodical but that's Impossible for nothing by distance can be augmented in appearance and when so proximate as to be Immediate it must appear of its own just bigness and no more my meaning is by being so proximate as capable the Eye being fixt att one revolutionary view to take in the whole Circumference of the thing observed for what is beyond the Compass of the Eye's reach belongs not to the arguement in hand or Hypothesis

This shews us that there is a certain propers distance that an whole object is to be intirely seen by an Eye fixt: but nearer, part of it must be lost and not seen as being beyond the Compass of the Eye's extention i.e: the utmost Angle the aperture of the Eye can make

From *hence we gather that the Eye must be opposite to the middle of the thing viewd as capable to take in equally all its extream parts which is only in a uniform figure as the Circles Periffery

For in a Circles Square if it takes in its Corners it takes in as much more than its Sides therefore takes in unequally all its extream parts being multifariously unequal so is a Triangle Hexagone, polligone or any Compounded figure as I call all figures but the Circle

from hence 'tis plain that a streight line is not equal but ever unequal to it self in all its parts but only in a double ratio to be observed that is there is two lines equidistant from the

the Center equal and never more than such two equal throughout all its parts so they goe by pairs as opposites on each side the Center

From hence we gather with Plato that the Circle is properly called the same and the Square called the Other or in other words the first called the Agent and the second the Patient

This informs us that by the conjunct operation between the Agent and the Patient another form is generated accordingly to Plato. called the substance or to Aristotle the substantial form

A Circle

is ever in unity with it self as an intire whole thus a Sphere of air the Eye being the Center which way soever you look there where your sight is equally lost there it is bounded and your Eye must be equidistant therefrom and ever in unity with the bounded circumference thereof, in all its parts as the major extream of motion as a maximum having an equal quantity of air which circumscribes you round as a dense medium

From hence we gather that a Sphere may be supposed to be made up of an Infinite number of Planes by dividing it at first with one onely plane in the Center and turning round its axis will describe an infinite number of planes or Circles by their extreams

From hence we gather that the axis which a Sphere turns upon must be an Imagined streight line and the minutest extream of motion as a minimum a form only of length without Breadth or depth, of something in the lowest degree

---

Data: Sight is in a streight line

if so then looking on any Object that is fixed and turning round the apparent motion of that first Object must make a Circle or what is the same thing if an Eye first

* Circular motion without beginning ungenerated over the same therefore uncorruptable

2 to 1 . . . is Double
2: 3 . . . is Sesquialter
4: 3 . . . is Sesquitierce which comprehends the Diatesseron
9: 3 . . . is Triple including the Diatesseron and Diapent
8: 2 . . is quadrube comprehending the double diapason
8 and 9 . . . make the tone Major.

fixt on any tangent point on the Earth and looking at any fixt star by the motion of the Earth the seeming motion of the star must form a circle by the first radius supposing to go round and the top of which to be supposed equal to the height of that same star

Celestial motion is an Entity continued Circular — circumscribing space and uniform bounded

Terestial is a Non entity streight limited line containing nothing

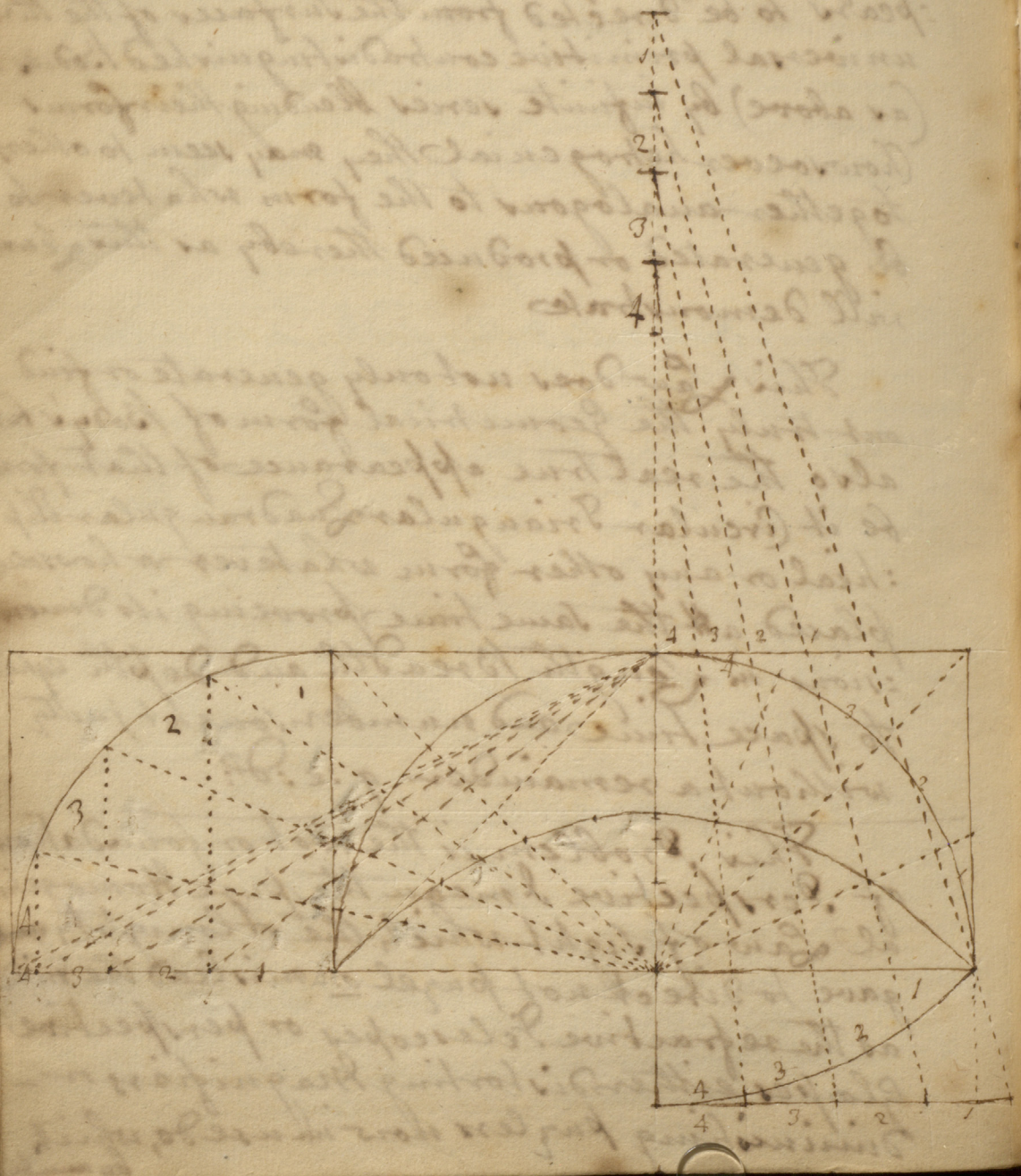
a Sphere moveing

* Frail Motion Plato calls Mother and Nurse the latter given by him to matter. But the cause of evil is the moving force residing within it not governed by order or reason tho not with a Soul neither tho Plato in his treatise of the Laws calls this motion the Soul repugnant and in Hostility with the other propitiously and kindly acting. Natural motion or frail motion, unlimited is a disquieted senseless and stupid cause. God neither infused into nature the Principles of Alterations and passive subjection to disorder, but when it was under the pressure of those unruly disorders and alteration he discharged it of its manifold Enormities and Irregularities, making use of Symetry, proportion and Number, as the most proper Instruments not of Alteration and lawless motion to distract the several Beings with passions and distinctions, but rather to render them fixed and Stable and nearest in their Compassion to those things that in themselves continue still the same upon the equal poize of Divinity. Of which the easy reconciliation of his seemings incongruities and contradictions of himself may serve here —

The great Law of natures paths in motion ap:
:pears to be directed from the surfaces of the three
universal primitive contradistinguished Bodies
(as above) by infinite series blending their forms
(howsoever hetrogenial they may seem to others)
together analogous to the form whatever to
be generated or produced thereby as this Lemma
will demonstrate

This Law does not only generate or find
out truly the Geometrical form of Body's but
also the real true appearance of that form,
be it Circular Triangular Quadrangular Elip
:tical or any other form whatever or howsoever
placed at the same time proveing its dimen
:sions in Length Breadth and Depth equal
to space time and number sought justly
without a remainder q: e: d:

This Problem is the root or foundation
of Perspective I mean the pure Homogen
al Law of Sight which the Almighty
gave to direct not puzel or mislead the mind
as the refractive Telescopes or perspective
Glasses either distorting Magnifiers or
diminishing puzlers now in use do, which
by mumber


1
2
3
4
4 3 2 1
1
2
3
A
4 3 2 1
1
2
3
4
4 3 2 1

by numbers the conisurer pretend to rectifie by leading
them farther in the dark, for by their setting out wrong
at first which when so they do (as Barrow said)
the farther they goe the more they are to seek in
goeing wide from truth

Is it not vain and frivolous to pretend
by numbers to find out the distances of length
when in proximity of the side
of a small square let them denominate of what
number they will in equal parts; when they
cannot divide its diagonal into aliquot parts
by the same common measure without
a remainder: how then much more must they
err when the object is at an infinite distance
when each remainder multiplys proportio:
nal to its distance how great then must the
unknown error be

*

The Emanation of lines from { Body / Air or Space / Substance } as

{ a motive Ens or object of light the Efficient.
{ an Oblique procession of Rays thro the whole medium as
{ the seat or Space of rest the passive cause { Agent between both of matter

from { an Orb or Circle
{ a Cone or Triangle Equilateral } the { Higher extream / Medium / lower extream }
{ a Cube or Square

in Strait lines { the upper Horizon / the Oblique Limbs / the lower Horizon. } in Motion

The Section of a Line into two unequal parts Supose to
represent the universe: The genera of things intelligible
comprehending the first Species then again Supose
each of these sections in two after the same manner
and this to constitute the genera of things sensible

Know Athens that in some Country there were games of Prometheus performing by Burning of Torches which have reference to arts and Science and was on those accounts instituted that by to shew the perfection of Science are gained by Succession not from the nimblenes or prosperous of this or that only Author: Since the nimblenes or strength in contention, may not have the happ to keep fire in their torch which may be extinguished either by running too fast as going too slow These games seem to have been Intermitted ever since the Authors viz Aristotle, Galileo Euclid and Ptolemy comparable to those first Authors in whom they shone so brightly why should not matters by succes of combate and Emulation be decided and not hang upon one many sparkling and shining Torch why should not men rouse up their spirit and not refer or yeild to the opinion of or as of a few ~~extreme reason extreme~~ But be thou Athens not tied down by prejudice but be free and secure let nature and reason be thy guide to of things be circumspect conclude not too hastily not too suddenly desist from new nor be precipitate to return to former experiments till all things are thoroughly weighed least you for ever cast away the new experiment in being absolutely reconciled to your former opinion unless evident proof of error appears highly to convince you.

center of the Earth exactly in Conformity agreeable to the Diameter of the Earth. Viz! the Earth's axis as likewise the Circumference of the Ecliptick Circle must be first known so as to be perfectly proportional and analagous to the Circle of the Earth be it of what Dimention you will please to assume. These things being unknown to them is plain because they Disagree among themselves

Then since the sun moving in the Ecliptick and the Earth resting on its stationary Axis, here are their two Desperate and Contradistinguish extreams to be blended together viz! motion and rest i:e: the Circle and strait line their hetrogen: :al forms. A absolute rest is only in the axis a meer Imaginary strait line of Determined length finite without Breadth, to the Diameter of the Circumscribing Circle and motion in a Circle including space as a whole but undetermind either where it begins or where it ends and what hath beginning hath no ending therefore Infinite And since hitherto all Philo: :sophers have held that the Circle and the strait lines are Hetrogenial and inconcensurable to each other; so likewise do they say the side of the square is to its Diagonal as surd quantities therefore in com :ensurable with each other that no comon measure or number can be given which shall divide the one and the other without a remainder; if so how do they or can they Demonstrate any certitude of the suns apparent

Distance

analagously together to account for their unity in action
that a scheme may be laid down to demonstrate how the
Celestial law which is Circular motion, and Terestial which
is strait motion may be so blended together in harmony that
we may know how to adjust motion time and place or
space so as to account for every or any certain place
or space in any Latitude gone to find what easting or
and westing has been made in sailing att ~~time~~ any
time If it is necessary to suppose the Sun in the Oblique
Oblique Circle of the Ecliptick to be the Mover and the
Axis of the Earth to be the stationary seat of rest and
suppose the sun to have moved in the Oblique Circle of
the Ecliptick from Aries when the sun is in the Equino
:tiall on the tenth of March to the opposite Equinoct
:ial point which is half his Circle round the Ecliptick
and Equinoctial too and suppose the Spectators Eye
stated any where on the Earth the apparent distance
that appears to sight which the Sun hath gone will
not be so great in the whole by many Degrees and
tho' his Degrees gone are always equal in themselves
to time and space Yet the appearance vastly differs
for every apparent Degree seems more or less unequal
according to the Suns approach or Distance from us
as yet unaccountable by numbers or Numerists.
So that the Easting and Westing is not to be justly
accounted for by any known Law in arithmetick
or by any of its Abettors untill they first know the
true proportional Distance from the Ecliptick to the
center

forward and backward on one of these four sides may attend
circular motion for ever. This Objection seems very plausible
the contrary rather positively impossible to be accomplished to those Numerists who acknowledge as Cheynes
doth in his Natural Philosophy in proveing natural
religion vide 15th page of his infinites annexed to his
natural Religion where he avers that to surd quantities no number or measure can be given which
shall divide the side of the square and its Diagonal
without a remainder which is plain truth if they
go to prove as the D. there had done calling it a surd
quantity therefore impossible to be done and I
think so to as he there manageth it for he carries
the absurdity along with him not knowing how to
rectifie the surdity so as to bring them into mensuration yet nevertheless by his leave it is to be
done in number and in measure then pray what
becomes of his infinites of Infinites when is chief
proof thereof is invalid which I am going to
Demonstrate not only numerically but Geometrically also.

Having the Circle given for the reall forms of
motion or simple body or Celestial motion as truly, so
a strait line being given for Terrestial motion which
is contrary to the former as duality a meer Nantas m
and that time and space are only vagues or accidents
to Motion. Yet as above since Motion time and space
must be by some law or Other so measured as to agree
analogously

and it may be for that objected that the side of a square and its Diagonal are surds and not Homogeniall to each other the last Objection seems plausible to such as own they be surds with Dr Cheine

as a meer Phantasme of an undetermind length unbounded
of it self as numbers are and what is unbounded can't be
said to have parts for part of any thing is such a determind
space or number of a whole which is limited and all the
parts together make the whole therefore a meer acci:
dent attending on motion a strait line or number
unlimited is a vague or Phantasme Thus if a strait
line is to be attendant on the Circular motion and in
its parts divided so as to keep in pace equal space in
equal time with motion (among themselves proportio
:nal but motion in a Circle is Infinite & a strait finite
and the last can't keep pace with the former by being
finite unless by going backward and forward i: e: that
as the major which is circular motion if it be divided
in periods let us suppose into 365 as the motion of
the sun goes in degrees on the Ecliptick and the
Earths Diameter or axis is a strate line & which
represents strait motion then this strait line must
have a proportional length given which shall be
analagous to the Distance that the Sun's radius
hath to the Earths center and must be divided also
into 365 parts in it self in answer to the Suns rays
through the medium in all the degrees on the
Ecliptick. But it may be objected that motion in a
strait line which is finite can never continue
going on equally with the circle which is infinite
but this Objection is easily solved by saying this whole
strait line may be converted into a square then motion
forward

void or Phantasme as time is a Phantasme of Duration
so place is a moving phantasm attending on Bodie in
Imaginary Space.

Thus a continued uniform motion shews its own
simple form by its Bodily rotation in a Circle But the Inner
Images or forms of Phantasms its attendants virtl
Time and Space must be by some Criterion searched for
tho' they are simular in form among themselves yet
their properties therein differ as much (as in time Pa-
Present now to a future then

Hence we gather and necessary conclude that a
Circle is the form of Included Space which we call place
or something as the way of uniform revolving motion;
as place is the form of the Included, or circumscrib
something Body; therefore the Circle is the form of
motion a real something revolving in itself, bounded
in unity as one wholl, circumscribing place, and
not a vague, or Phantasme unbound and contrary
to something termd uniform (virtl) (the strait line
contrary to a Circle) for the Circle which is unity
without beginning or ending is ever the same as
Plato call'd it

Hence 'tis plain that Duality being contrary
to unity as a phantasm not revolving in itself like
unity but unbounded, having both beginning and
ending in motion is never the same but contrary
therefore call'd by Plato the Other which can only
be a strait line contradistinguish'd from a Curve

as

Perspective a portion as it were of the Divine high way may be kept before we come where the ways part and divide themselves This Scientia we will stile the Primitive Law of Perspective or the science of things as contradistinguished lines compounded in direction to Intersect each other as rays harmoniously between Divine and Human forms or lines blended by an Infinite uniting mode of progressive series in motion Quod Conservativum est formæ majoris id activitate potentius is a ground in natural Philosophy for it makes for the conservation of the fabrick of the Universe, that the chain and contexture of nature, be not cut as under or broaks and that there be not vacuum as they call it or Empty Discontinuity in the world; and that heavy Bodies should be congregate and assembled to the mass or pile of the Earth, makes for the conservation of the region of gross and compacted natures; wherefore the first and universal motion comands and subdues the latter & more particular

Simple infinite motion, or motion including time and space uniformly

I apprehend it as one intire action of Body and that its two Phantasms time and space are meer accidents attending the moving Body; in Idea only, and that Body takes up certain place inscribed in part of Imaginary space, wherein it goes in the supposed

Horizon as perpendicular to the Zenith, line as
the real upper base as the type or axis of the Earth
or rest or field of space as least

Wherefore the science of Perspective is the
knowledge of three parts, as a triple beam of thing
viz circular motion of Heavenly Bodies as the
first extream second The Intermediate position
of the transparent air as a Diaphanous Medium
third the Heavy Earth representing by the rotation
of its ~~heavy axis~~ Imaginary Axis, the seat of
rest the other extream or the field of space as passive
matter, fitt for the masculine spirit or form of
motion viz a Circle to generate on

And because the partitions or modification or
placing of these lines to bring them into an Har-
monious problem fit for Demonstration are not
like several lines that meet in one point as of
thaught but rather like Braunches of trees that
meet in one stem which stem for some Demen
-tion and space is entire and continued, before it
breaks and parts itself into arms and boughs, there-
-fore the nature of the subject requires, before we
pursue the parts of the former Distribution, to
erect and constitute Our Universal Scienca
in position as a Scheme which may be the Mother
of the rest, and that in the progress of this science of
perspective

from the three primitive simple Bodies from which they are
generated viz.t 1.st the Sphere 2.dly the Cone, 3.dly the Cube
the Sphere represents the arched form of Heaven and its
Infinite Motion by a Circle the Cone represents the air
a fluid or transparent or pelucid medium by the form
of a Triangle in obliquity the Cube represents the Earth
as stable and fixed in its ~~state~~ rest of rest by the form of a
Square in lines perpendicular to each other and these
former primitive, have their secondary formes in
three strait lines each as the lowest degree of formy
I call vigi tipi

And these three secondary formes or types tho'
all strait lines yet differ in extention from each
other as the prior formes do in their figure from
each other analogously for the first is a strait line
generated as Diameter to the circumscribing Circle
or the Diagonall of the included Square and major
strait line the second is a strait line as the side of
an equilateral triangle as a mean circumscribed
in the same circle and equal to the 4.th part of the
Circles periftery the third is the side of the circum
: scribed square in the same Circle as a fourth
part thereof and minor

And these three strait lines will differ in lengths I
will call the types of their originall Bodies or formes the 1.st
Largest the type as axis of Circular motion from one
extream to t'other of rest, the second the type of the gradual
Obliquitie in the axis of this medium the third the
line coincident equal and coincident with the terestial
Horizon

Truth because of Pythagoras Dee et alior any one of them 'tis said
Ipse dixit but take it our own by Deep search from mean
things mounting as by steps within our reach of proof, we
humbly gain the Height which others miss following nature
who ever begins with small things gradually mounting to
wonders overcoming surprizing Difficulties whilst Pride
haughtily looks up beyond human sight to vail its
Ignorance soars aloft, disdaining to cast an Eye on
small low beginnings least they should seem mean to
the vulgar Eye thus the task they undertake to undo
wanting true gradual endeavours they are forced
to cut that gordian knot they cant untie

Knowledge is like waters some descend from
the Heavens some spring from the Earth, so the
primary partition of this ~~Earth~~ science of my
Linial Univers is to be derived from its fountain
~~Relation~~ which proceeds from a twofold Information
i.e. 1st from the Heavenly Circulation of its orbs
and from terestial rotation of the Imaginary Axes
of this Globe we tread on which is a strait line to
our Idea thereof, as a certain determined or limited
length in line. The 1st represents Infinite motion
The 2d finite place of rest for Body

Bodies whose surfaces or Planes are the Objects
for Perspective lines to shew their reall appearance
through or on a Diaphanous or supposed Medium
duely placed; and since lines are the forms circumscri-
bing Body or tracing its Motion and their Number are
but 3 contradistinguished from each other derived

or give a square equal to a Circle with Demonstration thereof as it is generally confessd by all thitherto. And that the circle is the form of Celestial supernaturall or simple motion, as unitie ever the same as Plato call'd it and Major so methinks the strait line should be the form of Terestial naturall Compound motion inequallie goeing forward and backward to keep time with the other as also by Plato call'd the other ——

Arithmetick is a Charming expeditious and faithfull Servant whilst she attends on her sedate thinking Mr. Geometry, obeys her orders, wings'd at head and heels she flies from Earth to Heaven in a trice seldom an intake unless on her head she Deviates from Geometrical Laws given, and of herself she sets out wrong herself att first

But Arithmetick when alone to me seems a Superbe pleasing fleeting Dream ne'er doubts its certainty still mounting higher till out of humane Kenn like Phaeton falls Headlong down — unable to govern the reigns herself she Headlong falls and stumbling awakes convinced within itself it set out wrong att first which Pride concealing never owns for fear of loosing credit

Methinks Geometrical slow paces moves on the earth within our reach most likely to perform the Office of a guide or Dictator to lead or sett down means to find the way to Truth. By slow paced steps examine the way with patience we have gone towards Demonstration and not only Dream of Heavenly Truth

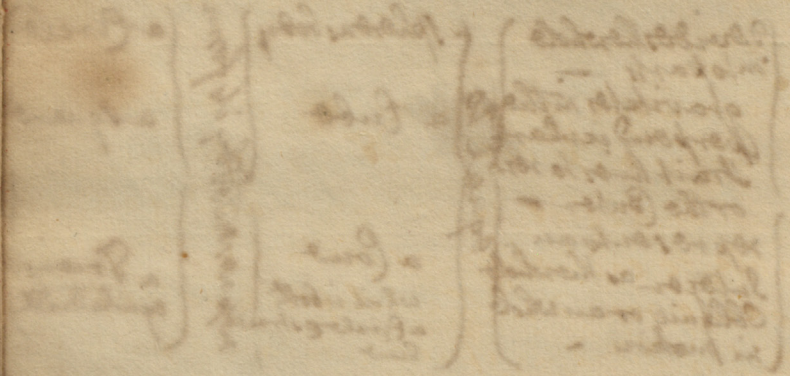
vi: fo: on the other side the same with alteration

Motion } by motion I mean
Time } by time I mean
Space } by space I mean

spirit or the Efficient or active power
Duration of motion pap missio the medium
the Distance the moving Body hath passed

(4) Universall Motion is one entire action on bodies and formes, by rotation in a sphere; and Time & Space which are Attendants .... or accidents within it, and if all three are comensurable to each other as certainly they be then the sun goeing round in the Ecliptick as the primum Mobile whilst it is Dividing Space into equal parts, the duration of which, I call time, and the way gone I call Space; the two latter are governed by it, for neither Space or time are in themselves any thing, but a meer vague or accident to motion or body attending each in different ways, for such a part of Space called place attends Body ever circumscribing it wherever it is if I may so say and the Duration of the motion may be methinks called time

And since motion continued or infinite can have no better form proper to it than Spherical and that a Circle is its proper representative form (on a plane without beginning or ending revolving into itself now its two relatives, space and duration should have their form, that Just proportion may be kept between all three harmoniously; and since Arithmetick is confessed insufficient to find a Number or give a measure which shall divide the side, of the Included or any square and its Diagonal without a remainder



(3) a strait line over a strait line 4

The strech lyne in the Coomotricall distance is kept over equally the same distance

Number / Weight / measure — by Motion / Buddney / unity — which divides the whole into parts — gravitates in the perpendicular strait lines to or the Center — represents an Integer as the whole Obliquity or an whole in motion — equall — a Sphere as body — a Cube — a Cone which is both a Circle & strait line — by Longitude & Latitude — a Circle — a square — a Triangle equilaterall

which is — in unity in line — the radius or minor strait line — the mean strait line — a Curved — a perpendicular or Lowaide — an oblique or Declining line therefrom — or round a Center as the earth to the Horizon the Equator —

So that a Circle a square and a Triangle are the Three Princi
ples or forms I have occasion for in this my Liniall universe
which are capable to generate all the rest of forms whatsoever
each contra distinguished to each other. The first is simply
round the second four simply square strait lines and per:
pendicular to each other the third strait but simply equally oblique
all three and each other as two equally declining to a point from
the extreams downward from a line placed Horizontally which
I am to declare

Three motions make a whole in motion, an unity, or an Integer.
capable by coexcitation to generate any form whatsoever
as also by three powers there is no point within a Sphere
as in ppbo any point in the equinoctiall But what may be other:
mind or declared what point and how and where traced therein
whether in or without the Center of the Earth or Excentrall any where
Thereon which is to be demonstrated

and beginning at 1: the first part will reach to 11. and 3
one third and the 2.d part will reach to 22 and 2/3
make a line to 22 and 2/3 on the other side of the Triangle
then take from 1: to 8: or from 8: to 2 in your Compasses and
transfer it to the line a: a: which reach from a: to m:
then lay a Ruler from a to m and it will intersect the
line B: 3 in 24 and any parallel line to B: 3: will be inter-
-sected by the Ray 1: K: into such a proportion that the one
part will be the side of the square and the whole line the
Diagonall as for Demonstration and Illustration

first note that the side of the square bears a triple
proportion to the Diagonal and that the side of any square
is reduced to its lowest number or I may call it its parly
primitive number as an Aphocar or Root for lay a Rule
from B: to 8: on either side & the said line shall cut the
square whose side is 8: in the Diagonale points and
no other square either bigger or lesser

q.d whether those two last pages don't
false

68	major 13	34 major	differonce	$6\frac{2}{3}$ Diag
$54\frac{2}{3}$	mean 0	$27\frac{1}{3}$ mean		0 medial
48	min: $4\frac{2}{6}$	24 min:		34 side

note that the Differonce between the max: and min: is $6\frac{2}{3}$
and the difference between the min: and Medial is $3\frac{1}{3}$
and the difference between the Medial & max: is

$6\frac{2}{3}$

The Major includes the minor

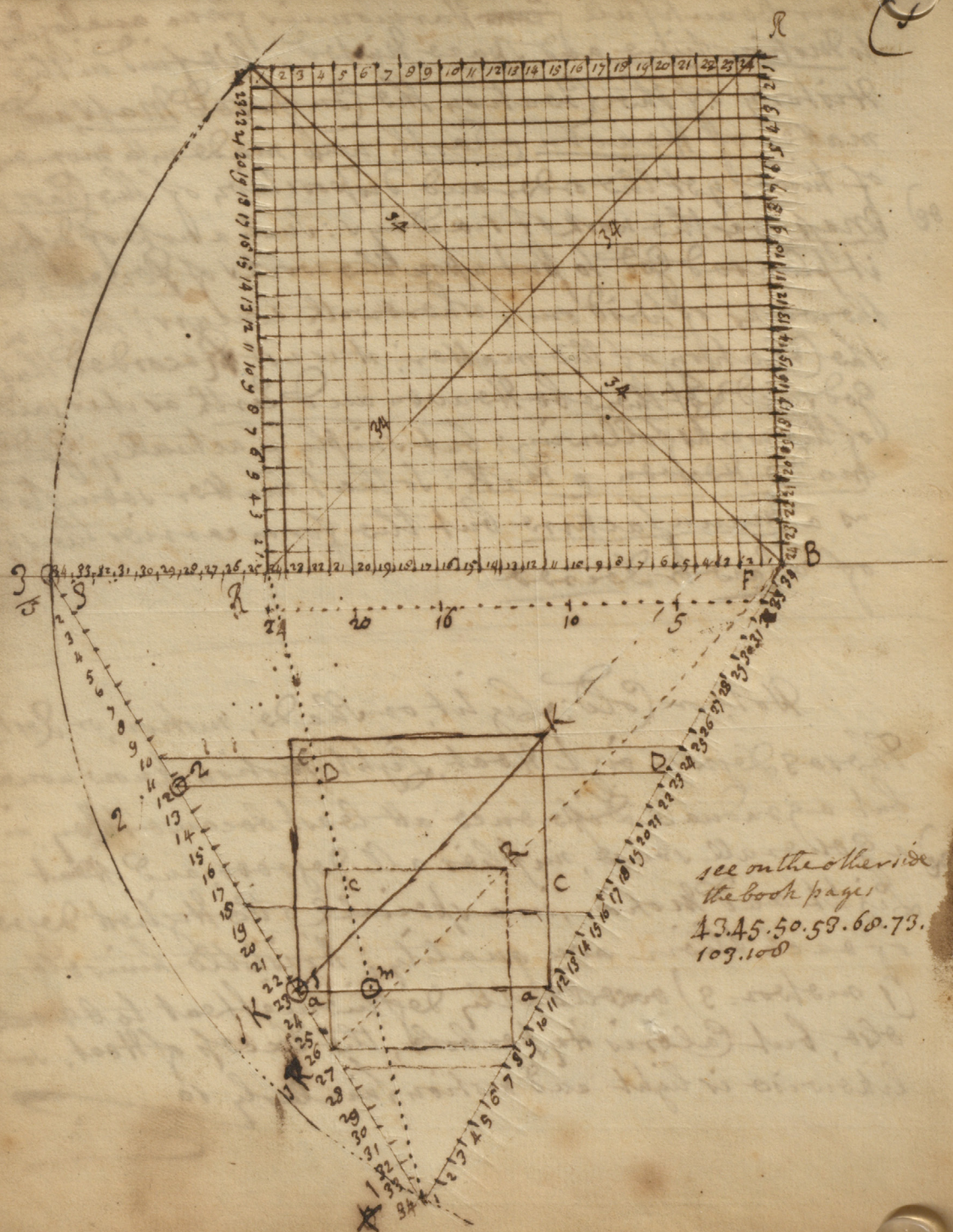
Any length taken upon the side of a Triangle equilateral if triple the same common measure or length ~~& double or treble~~ as often as you please repeat the same measure on the side it being equilateral

Corollary: Then take the diagonall X X in the Compasses and set three times as 1. 2. 3. on the side of the triangle A which will reach to the point 3 and make the line 3: B which give the 3: B: X and another Triangle at the point 1: 0: X and what ever equal or unequall measure be on the side of the square appertaining to the aboves said Diagonall if set upon the line 1: 0: will by laying a Ruler from the Point X to the Division on the said 1: 0: as at time it will give three times repeated on the line 3: B: so consequently will divide the two diagonals or said by one Comon measure without a remainder which was to be demonstrated.

Example take the whole side of the said square which suppose to be eight and set on the line 1: 0: and from the point X lay a Ruler to B: and it will cut the line 3: B: at 24 or give you three times the side of the square so consequently if the side were divided into any even parts as 16 then the diagonall would be 48

N: this is scratched out & the fold writ under it

Divide each side of the great equilateral Triangle into 24 equal parts and from X: 1: to 8: make a line 8: 1: and take from 1: to 8: in your Compasses and carry the same measure three times on the side which will reach to 24 then divide the whole line B: into 3 equall parts


R
B
S
K
C
D
R
see on the other side
the book pages
43.45.50.58.60.73.
109.100

their beautifull ~~form~~ Harmonies forms analogous to Motion time and space limited. We find in the History of the Creation the Confused Mass and matter of Heaven & Earth was made in a moment of time; yet the order and disposition of the Chaos or Mass was the work of six Days: Such a mixt of different it pleased God to put upon the works of Power & the works of Wisdom; wherewith concurs, that in the Creation of the matter; it is not Recorded that God said Let there be Heaven and Earth as it is said of the works following; but simply & actually, God made Heaven & Earth: So that matter seems to be as a manufacture but the form carries the stile of a Law or Decree

Hot, or Cold; Light, or Shade; motion, or Rest. These 3 Degrees vizt Heat, Light Motion know none but a gradual Difference: at least because they in a Generall sense, implies all Degrees, and Heat Light and Motion, in a speciall the Highest Degree of each their own quality; Aristotle himself (1 meteor. 3) excellently defining Heat to be nothing else, but Caloris Hyperbole, the Excess of Heat. so likewise is light and motion Similarly so

1 Local motion, or a Body as an Object moving in a Circle
one Extream
2 Motion of Rest, or the Eye stated the other Extream
3 The Intervening fluid, or Diaphanous Medium
being supposed given

Let these three be the Arch types or first platforms which are in their Attributes of Infinite Motion or extention of Motion in Space that the three powers circumscribes operates or fills up as one whole unity of action blending and generating by their various beams or rays of action infinite Ideal forms of Bodies supposed to be accidents or more Shapt assemblages of them containing in the Circumference Length and Breadth, without thickness which we call Space or extention where we may not seek it by the name of Substance or Body as Matter or Substance hath 3 real Dimensions the whole superficies of which our sense of sight cannot circumscribe at one momentous view, wherefore reason or wisdom must be called in so that the Intellect may conceive the Idea of the whole motion of Bodily form in mind though only parts of it be visible to sense
Thus we see a Double search is to be made whereof the one is chiefly expressed or referred to motion as the momentous Power active in each ray or strait line the other in disposing strait lines or ranging the beams of light or sight by deep Thought, reason, or Wisdom (which otherwise would be a Maze of Confusion) in

their

We Consulted for some time that thought, as a parr effect of the zeal of this good father: & in fine the Vicroy told me, that hee very much wondr'd, that Ptolomey's System had been so generally received, seeing it was so little probable. Sir answer'd I, the generality of men who only Judge by sense, are left to convince themselves by their eyes. And like as he whose ship is toss'd from Land to Land, continueth to abide immoveable, and that the shore walketh; Thus men turning with the Earth round the Heaven, have believed that it was the Heaven itself which turned round them: Add yo to that the insupportable pride of Mortalls, who perswade themselves that Nature was made onely for them: as if it was probable that the Sun, a great Body four Hundred thirty four times bigger than the Earth, had been lighted only to light its Medlars, and to make its Cabages grow to a Head:

continually evaporates from its Bosom on that side the
Sun faceth, struck back by the Cold of the middle region,
would return up again, & of necessity, not being able
to strike otherwise than Slanting, make it thus to whirl
about.

The Explanation of the other two movements is still
Intangled. Consider a little, I pray you, Interrupted
the Viceroy, all those words. I had rather, said he, -
discourse with this (for I have read some books of
Gassendus upon this Subject) But on this Condition
that you will give ear to what one of our fathers
answer'd me one Day, who maintain'd your opinion.
In Effect, said he, I am of opinion that tis the Earth
moves, not for the reasons alledged by Copernic, but
because Hell fire being enclos'd in the center of the
Earth, the Damned which would fly from the heat of
its flames, climbs up against its arched roofs, to -
get away, and thus maketh the Earth to turn round
as a Dog doth a wheel, when he Runs enclosed
round enclosed with in.

to the weak, the great to wait on the small. Instead of a ship sailing with a fair wind along the coasts of a Province the Province should turn round the ship. If you find it difficult to comprehend how a Mass so ponderous could move itself; tell me, I pray you, if the Stars & Heavens (which you make such solid) are lighter? Is it still easier, for us who are assured the Earth is round, to conclude its motion by its form: But why is it to think the Heaven round, since you know it not, & that of all forms, if it hath not this, it is certain it cannot move? I reproach not your excentricks nor Epicycles which you cannot explain but very confusedly, & through which I preserve my system. Let us speak only of the natural causes of this movement. You are compelled to have recourse to Intelligences who move the and manage your globes. But I without mentioning the Sovereign being who doubtless created nature in all perfection, & his wisdom which finished it, so that having accomplished it for one, he might not have rendered it defective for the other, I say, that the sun beams with its Influences, happening to strike above by their Circulation, make it turn, as we do a Globe by striking it with the hand; whence just as the smoke which

continually

necessity of each person; & that the Cause of Generation is placed in the middle of the Body, to manage it the easier; just as sage Nature hath placed the genital parts of a Man, the Kernell in the midst of the Apple, the stones in the midst of their fruit: and just as the Onion preserved under shelter of a hundred rinds which surround it, the precious stem from whence ten Millions of others have drawn up their Source: for this Apple is a little universe to its self whose Kernell being hotter than the other parts, is the Sun, which distributes round it self the heat that is the preserver of its globe; & the stem in that opinion is the sun of this little world, which warms and nourisheth up the vegetative salt of that little mass. This then being supposed, I say that the Earth standing in need of the light heat and influence of this great fire, turneth her self about to receive from it equally in all her parts that vertue which preserves her: for it would be as ridiculous to believe that this great body of light moves round in a point which there is no need of, as to Imagine when we see a roasted lark, that they have turned the Chimney round in order to roast it: Otherwise, if the Sun was to make that unprofitable toil, that the Physick would be in need of the sick Person; that the strong ought to yield

without being tir'd. But you know not, added he, the pleasant quarrell which I have had for your sake with our fathers. They will have it that you are a Magician, & the greatest favour you can obtain of them is to be thought an Impostor. And, in effect, this movement you attribute to the Earth is a very curious paradox; and for me, I'll tell you frankly that which causes me not to be of your opinion, is that as 'twas but yesterday you departed from Paris you might arrive in this Country to Day without the Earth's moving; for the Sun having lifted you up by the means of your bottles ought it not to have brought you hither, since according to Ptolomy & the modern Philosophers, it moves slanting, as you make the Earth? And then what great folly have you to imagine that the Sun is immovable, when we see its motion, & what appearance that the Earth turns with so much force, & when we feel it firm under us. Sir, reply'd I, those are the reasons which oblige us to conjecture this. first, 'tis common reason, to believe that the Sun hath taken its place in the middle of the universe since all Bodies which are in Nature, stand in need of this radical heat; that it dwelleth in the heart of the Kingdom, to be in a condition of readily satisfying the

necessity

many Bottles? To all this, I repl'yd, that 'twas not the Devil
rout me in this Condition, that they know not me, because
they could not know all men, that I know not the wine
could carry ships to Paris: That I had no Information
to give to the Marshall of the Hospitall, & I was not
Loaded with Brandy. Oh! Oh! said they to me, taking
me by the arme, you make a jolly Companion: The
Governour will know you well. They Carried me to their
Company, where I learnt I really was in France but in a new one
Insomuch that I was sometime after presented to the Vicroy, who
ask'd me my Country name and quality: & after I had satisfied
him, relating the agreable success of my voyage, whither he
beleived me, or feigned so, he had the goodness to make me a —
present of a Chamber in his own appartment. My good fortune
was great, to meet a Man capable of high opinions, who didn't
wonder, when I told him that the Earth must having turned
during my Elevation, since having begun to rise about
two leagues above Paris, I fell as through in a perpendicular
line into Canada

att night, as I was going to Bed, he entred my
Chamber, and said: I should not have come to Interrupt your
repose, unless I had beleived that a Person hath found out the
the Secret of taking so great a Journey in half a day's time

I had been possibly elevated in the Air within their sight. I was willing to accost them: But as if the fright had chang'd them into Birds a moments sight lost them in thendest forest. However I overtook one of them whose legs without Doubt had betray'd the Heart. I asked him with a great deal of pain (for I was quite out of Breath) How farr they recken'd it from thence to Paris, and how long since they first went nabbs in France, and why they fled from me with so much fear? The Man that I spoke to was a Tall Tawny Complexioned Old Man who Imediately cast himself att my Knees joining Hands upwards behind the Head, op'n'd his mouth and shut his Eyes. He mutter'd along time between his Teeth, but I did not discern he spoke any thing distinctly: so that I took his language for the hoarse warbling of a Dumb Man

Some time after I saw a Company of Soldiers arriving Drum beating, & observed two seperate from the Company that they might know me. When they were nigh enough to be heard, I ask'd them where I was. You are in France answer'd they to me: But what Devil coat you in this Condition? & from whence comes it that we know not you not? are the ships arriv'd? are you a going to inform the Governour? and why have you divided your Brandy into so

many

it was already Midday. I leave you to think how I was astonished. Certainly I was so, that not knowing how to attribute this Miracle, had the Insolence to think in favour of my boldness, God had once again nailed the Sun to the Skies, that it might light so generous an Enterprise. What encreased my Astonishment was, that I know not the Country where I was, seeing it seem'd to me that going up strait way I should have descended into the same place from whence I departed. However the less dispos'd as I was, I set forward towards a Stubble where I perceived some Moors & was scarce within pistoll shot of it, when I saw my self environed with a great Number of Naked Men. They look'd very much surpriz'd at meeting me; for I was the first, as I think, whom they had ever seen dressed with Bottles. And entirely to overthrow all explanations that they might give of this Equipage, they said that in my going along I hardly touched the ground. As they know not that at the least motion I gave to my Body; the heat of the Midday rays lifted me up with my Horse, & had not my viols been in a sufficient Number

To these whims, which perhaps may be called fower fit, succeeded the hopes of making so fine a voyage to come to a good end: So that I shutt myself up in a house-room enough, to the end I might bring it about, where having flatter'd my self Conceit with some means proportioned to my Subject, Here is, as I got up into Heaven

I had fastned round about me a quantity of viols filled with Dew, upon which the Sun darted his Rays so violently, that the Heat which attracted them, as it doth the thicker Dews, carried me so high, that at length I found my self above the middle region. But as that attraction made me ascend with so much swiftness, that Instead of approaching to the Moon as I thought, it appeared to me farther than at my Departure: I broke many of my viols, even to the making me sensible that my weight would overcome the Attraction & that I should return towards the Earth My opinion was not false, for I fell some time after And Computing the time since I departed, it ought to be Midnight And yet I bethought my self that the sun was at its highest point of the Horizon, and

it

Inhabitants of the Moon and att the same time Disappeard.
I stood so surpriz'd, to see such a book, plac'd there by itself
found open in that place, that I took all those joint —
accidents, for an Inspiration whereby I know
the Moon is a world. What said I to my self, after having
all Day discours'd upon one thing, a Book, which perhaps
is the only one in the world where that matter is treated
of so particularly, to fly from my Library upon my Table, &
become capable of reasoning as to open it self just in the
place of so wonderfull an adventure to draw my Eyes upon
it as by force, and afterwards to furnish to my fancy
those reflexions, & to my will the Designs that I am —
making; Doubtless continued I, the two old Men, who
appear'd to this Great one, are the same that have
displaced my book and open'd it upon that page, to
save themselves the trouble of speaking to me as they
did to Cazdan. But, added I, I know not how to clear my self
of this doubt, if I don't go up thither, and why not —
answer'd I immediately to my self. Prometheus was formerly
in Heaven to steal fire from thence. Am I less bold than he?
and have I less room to hope as favourable a success?

that this globo is a world, but I alledged to them in vain that many great men Men had been of that opinion. I but obliged them to laugh the more

In the meantime this thought, the boldness of which agreed with my humour, strengthened by Contradiction, plunged itself so deeply in me, that all the rest of the way, I longed for a Thousand Definitions of the Moon which I could not bring to pass. So that I resolved to maintain that comical belief by almost serious reasons, it wanted but little that I had yielded already, when a miracle whether Accident, Providence, fortune, or perhaps what is called vision, fiction, Chimera, or folly, If they will, furnished me with an opportunity of engaging myself in this Discourse. Being come home, I went into my Closet, where I found upon the Table a book lying open which I had not put there. It was Cardan's, and though I had no design to read it, I cast my eyes as it were by force upon the History of that Philosopher, who said that studying one evening by a light, there appeared two great Men entering through the Doors that were shut, the which after many Questions that he asked them, they answered they were

Inhabitants

A Comical History of the State and Empire of the Moon

The Moon was in its full, the Sky was open, and it had struck nine att Night, when returning from Clamart near Paris (where Mr. de Grigy the Son, who is Lord thereof, had treated me with many more of my friends) the many thoughts that was upon ball gave us regaled us upon the way: So that our eyes being Drowned in that great Planet, some tooke one of us took it for a Dormer Window in the Heavens; another affirmed it was a round Copper plate on which Diana drows the hands of Apollo; another, that it might well be taken for Apollo the Sun itself, who having att Night stript himself of his Rays, loobt through a hole to see what was done in the world when he was not there: And I, said I to them, some are just now laughing in the Moon who desire to mingle my — Enthusiasms with yours, I believe, without amusing — myself with acute thoughts, with which you merrily pass away the time to make it go on the faster, that the Moon is a world as this, to which ourselves for a Moon. Some of the Company regaled me with a great shout of laughing. Thus it may be said I to y^m. some are just now laughing in the Moon att another, who maintains

A Comicall History of the State & Empire of the Moon

The Moon was at its fulle the Sky was open and it had struck midnight when returning from Charonia near Paris Mr Gingy the Lon who is Lord thereof had treated me with many more of my friends the many thoughts that Saffron Hale game regaled us upon the way so that our eyes being drowned on that great Planet sometimes one of us took it for a Dormer window in the Heavens another affirm'd it was a round Copper bake plate on which Diana drew the bands of Apollo. Another that it might be the Sun itself who having at night stript himself of his rays took a turn a hole to see what was done in the world when he was not there. And I said I to them who desire to mingle my Enthusiasm with Jove I beleive without Annoying myself with acute thoughts with which you merrily pass away your time that the Moon is a world as this to which ourselves for a Moon some of the company regaled me with a Great show of Laughter Thus it may be said I to them some are just now Laughing in the Moon at another who maintains that

b.

Phil: Burton
2d June 1730

Phil Burton

1395429577

